

Biodiversity Development Assessment Report

133 Riverview Road, Avalon Beach

*Prepared by Ecological Consultants Australia Pty Ltd TA
Kingfisher Urban Ecology and Wetlands*

16 July 2025



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1	16 July 2025	Brooke Thompson	Final	Rise Projects

Summary

Ecological Consultants Australia Pty Ltd (ECA), trading as Kingfisher Urban Ecology and Wetlands (Kingfisher), has been engaged to prepare a Biodiversity Development Assessment Report (BDAR) for a proposed development at 133 Riverview Road, Avalon Beach NSW 2107 (the subject land).

The proposed development involves the demolition of the existing dwelling, removal of trees, and construction of a multi-level dwelling, swimming pool, driveway, garage, boatshed, deck, jetty, pontoon, and an inclinator to facilitate access to Pittwater. The development requires consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Northern Beaches Council acting as the consent authority.

As the proposal involves the clearing of native vegetation identified on the Biodiversity Values Map, it triggers the need for an accredited assessor to evaluate the impact of the proposal on biodiversity values using the Biodiversity Assessment Method (BAM).

The site contains 0.09 hectares (ha) of Plant Community Type (PCT) 3234 – Hunter Coast Lowland Spotted Gum Moist Forest. This PCT is associated with the Pittwater and Wagstaffe Spotted Gum Forest, an Endangered Ecological Community (EEC) listed under the *Biodiversity Conservation Act 2016* (BC Act). The EEC is classified as a Serious and Irreversible Impacts (SII) entity.

PCT 3234 is in moderate condition on the subject land, with a Vegetation Integrity (VI) score of 45.1. The Large-eared Pied Bat (*Chalinolobus dwyeri*) and the Eastern Cave Bat (*Vespadelus troughtoni*) are assumed to be present, given nearby records and the availability of suitable foraging habitat.

The BDAR assesses the proposal as involving the clearing and/or modification of 0.09 ha of the Pittwater Spotted Gum Forest on the site, considering both construction and post-construction impacts. The proposal will remove nine native sub-canopy trees, while retaining seventeen native canopy trees and six native sub-canopy trees. The proposal retains Tree 8, the only habitat tree, which is inhabited by Sulphur-crested Cockatoos (*Cacatua galerita*).

The foreshore vegetation will be retained, except for Tree 6 and Tree 7, both Cheese Trees (*Glochidion ferdinandi*). Tree 6 has been recommended for removal by the Arborist due to its poor health and risk of structural failure. Tree 7 has been recommended for removal as it is located within the footprint of the proposed inclinator. This species is exempt under the Council's Development Control Plan (DCP).

Indirect impacts include edge effects, construction noise and vibration, light spill, potential weed spread, and erosion and sedimentation during construction.

Impacts associated with the proposal will be mitigated through the implementation of the following measures, including (but not limited to):

- A pre-clearance survey will be undertaken no more than seven days prior to the commencement of clearing by the Project Ecologist. All vegetation clearance must be supervised by the Project Ecologist.
- Temporary exclusion fencing will be erected to clearly mark the approved clearing limits and the vegetation to be retained. Signage must be attached to the fencing to inform contractors of the exclusion zone and the significance of the Pittwater Spotted Gum Forest EEC.
- Erosion and sediment control measures will be implemented and maintained during construction to prevent indirect impacts on the retained Pittwater Spotted Gum Forest EEC.
- A Biodiversity Management Plan (BMP) will be prepared to guide the protection and management of the Pittwater Spotted Gum Forest and associated fauna during construction.
- A Vegetation Management Plan (VMP) will be developed to guide the rehabilitation, implementation, monitoring and maintenance of the Pittwater Spotted Gum Forest EEC. Any revegetation works proposed in the VMP will ensure that 100% of the planting list incorporates native vegetation listed in the Final Determination for the Pittwater Spotted Gum Forest EEC.

- Weed and pathogen control measures will be outlined in the VMP and implemented during construction and throughout the life of the development.
- All storage, stockpiles and laydown sites must be located away from any native vegetation to be retained.
- Any landscaping works must ensure that at least 80% of the planting list incorporates native vegetation listed in the Final Determination for the Pittwater Spotted Gum Forest EEC.

Table E1 identifies impacts that require an offset – ecosystem credits. Table E2 identifies impacts that require an offset – species credits.

Table E1 Impacts that require an offset – ecosystem credits

Vegetation zone	PCT	TEC/EC	Impact area (ha)	Number of ecosystem credits required
1	3234-Hunter Coast Lowland Spotted Gum Moist Forest	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	0.09	1

Table E2 Impacts that require an offset – species credits

Common name	Scientific name	Loss of habitat (ha) or individuals	Number of species credits required
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	0.09	2
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	0.09	2

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Shortened forms

AHD	Australian Height Datum
APZ	asset protection zone
AOBV	area of outstanding biodiversity value
BAM	biodiversity Assessment Method
BAM-C	biodiversity Assessment Method Calculator
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
CEEC	critically endangered ecological community
DBH	diameter at breast height over bark
EC	ecological community listed under the EPBC Act
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EEC	endangered ecological community
HTW	high threat weed
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	local government area
LLS Act	<i>Local Land Services Act 2013 (NSW)</i>
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NSW	New South Wales
PCT	plant community type
SAII	serious and irreversible impact
TBDC	threatened Biodiversity Data Collection
TEC	threatened ecological community
VEC	Vulnerable ecological community

Declarations

i. Certification under clause 6.15 *Biodiversity Conservation Act 2016*

I, Brooke Thompson, certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).

Signature:



Date: 16 July 2025

BAM Assessor Accreditation no: BAAS24037

This BDAR has been prepared to meet the requirements of BAM 2020. Appendix I assesses compliance with the minimum information requirements outlined in BAM Appendix K.

ii. Details and experience of author/s and contributors

Name	BAM Assessor Accreditation no.	Position	Tasks performed	Relevant qualifications
Brooke Thompson	BAAS24037	Ecologist Kingfisher Urban Ecology and Wetlands	Report preparation BAM-C data entry and analysis Figure preparation BAM plot surveys Targeted threatened flora surveys Targeted threatened fauna surveys	BSc (Biology)

iii. Conflict of interest

I, Brooke Thompson, declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Signature:



Date: 16 July 2025

BAM Assessor Accreditation no: BAAS24037

Stage 1: Biodiversity assessment

1 Introduction

1.1 Proposed development

1.1.1 Development overview

The proposed development involves the demolition of the existing dwelling, removal of trees, and construction of a multi-level dwelling, swimming pool, driveway, garage, boatshed, deck, jetty, pontoon and an inclinator to facilitate access to Pittwater.

The legislative pathway for the proposed development is as development requiring consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Northern Beaches Council as the consent authority.

The proposal includes the clearing of native vegetation identified on the Biodiversity Values Map, which triggers the requirement for an accredited assessor to evaluate the impacts of the proposal on biodiversity values through application of the Biodiversity Assessment Method 2020 (BAM).

1.1.2 Subject land

The subject land is legally described as Lot 1 in DP 1176452, located at 133 Riverview Road, Avalon Beach NSW 2107 (refer to details in Table 1.1). The lot has an area of 1,133 m² and contains a single-storey residence, pathway, landscaped gardens and lawn areas. The site is situated on the waterfront, with a direct interface to the Pittwater waterway. The location of the subject land is shown in Figure 1.1.

Table 1.1. Subject land details.

Legal description	Lot 1 DP 1176452
Address	133 Riverview Road, Avalon Beach NSW 2107
LGA	Northern Beaches Council
Area	1,133 m ² (0.11 ha)
Land zoning	C4 – Environmental Living
LEP	Pittwater Local Environmental Plan 2014
DCP	Pittwater 21 Development Control Plan

1.1.3 Proposed development and the subject land

The proposed development includes the following components:

- Demolition of the existing dwelling using a 5-tonne excavator and manual labour, with debris to be craned off-site.
- Vegetation clearing involving the removal of nine native sub-canopy trees, four exotic trees and one dead tree. Seventeen native canopy trees and six native sub-canopy trees will be retained. Tree 8, the only habitat tree, will be retained. The foreshore vegetation will be retained, except for Tree 6 and Tree 7, both Cheese Trees (*Glochidion ferdinandi*). Tree 6 has been recommended for removal by the Arborist due to its poor health and risk of structural failure. Tree 7 is within the footprint of the proposed inclinator and has been recommended for removal (this species is exempt under the Council's Development Control Plan).
- Construction of a new multi-level dwelling stepped down the sloping terrain, designed to present as a two-storey structure when viewed externally.
- Associated works, including construction of a swimming pool, driveway and garage.
- Earthworks involving cut and fill to accommodate the new structures:
 - The main dwelling will require excavation ranging from approximately -4.0 metres (east) to 0.0 metres (west), with an estimated 68 cubic metres of soil and 30 cubic metres of rock to be removed.
 - The garage will require excavation from approximately -3.0 metres (east) to 0.0 metres (west), with an estimated 112 cubic metres of soil and 200 cubic metres of rock to be removed.
- Construction of foreshore access infrastructure, including a boatshed, deck, jetty, pontoon and an inclinator to facilitate access to Pittwater. The jetty will be partially constructed from light-permeable materials to allow sunlight to reach the seafloor, thus minimising impacts on seagrasses present.
- Installation of construction zone fencing to secure the site during works.
- Construction access will be via Riverview Road. Waterfront construction works will be accessed by barge.
- Equipment to be used includes a 5-tonne excavator (which may increase to a 12-tonne excavator for deeper excavations), tower crane, positrack bobcat and a small articulated dumpy.
- Sediment fencing will be installed along the northern and western site boundaries and around all stormwater pits to manage runoff.
- Landscaping of 704 m² (approximately 62% of the site area), with a minimum of 80% of 80% of all planting species native to the Pittwater area, selected from Council's recommended native plant list.

1.1.4 Other documentation

Other documentation submitted with the proposed development that is relevant to biodiversity:

- Architectural Drawing Set (Rise Projects, 22 May 2025)
- Arboricultural Impact Assessment Report (Blue Bros Arboriculture, 16 May 2025)
- Geotechnical Investigation (White Geotechnical Group, 2 May 2024)
- Plan of Levels and Detail over Lots 1 in DP 1176452 at No 133 Riverview Road Avalon Beach (RHCO, 20 March 2024)
- Stormwater Management Plans (Xavier Knight, 7 June 2024)



Legend

- | | | |
|--------------|--------------------|---------------|
| Subject land | Development layout | Tree retained |
| Cadastre | Inclinator | |
| Contour | Excavation | |

133 Riverview Road, Avalon Beach

Figure 1.1. Subject land.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:570



Figure 1.2. Site Plan.

1.2 Biodiversity Offsets Scheme entry

A Biodiversity Development Assessment Report (BDAR) is required to accompany a development application if the proposed development is likely to significantly affect threatened species, and the Biodiversity Offsets Scheme (BOS) will apply.

Section 7.2 of the *Biodiversity Conservation Act 2016* (BC Act) states that a development will 'significantly affect threatened species' if:

- it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or
- the development exceeds the biodiversity offsets scheme threshold if the BOS applies to the impacts of the development on biodiversity values, or
- it is carried out in a declared area of outstanding biodiversity value.

The BOS threshold is established by section 7.2(1)(b) of the BC Act and clause 7.1(1) of the Biodiversity Conservation Regulation 2017 (BC Regulation).

The threshold has two components:

- whether the amount of native vegetation being cleared exceeds a threshold area
- whether the development involves clearing of native vegetation or prescribed impacts on an area mapped on the biodiversity values map published by the Minister for the Environment.

1.2.1 Area clearing threshold

The area clearing threshold is one of the thresholds used to determine whether a BDAR must accompany a development application.

The area clearing thresholds are set out in clause 7.2(1) of the BC Regulation, as shown in Table 1.2.

The minimum lot size for the subject property is **700 m²**. The proposed development will impact **0.09 hectares** of native vegetation, which does not exceed the area clearing threshold.

Table 1.2. Area clearing thresholds.

Minimum lot size associated with the property	Threshold for clearing above which a BDAR is required
Less than 1 hectare	0.25 hectares or more
1 hectare to less than 40 hectares	0.5 hectares or more
40 hectares to less than 1000 hectares	1 hectare or more
1000 hectares or more	2 hectares or more

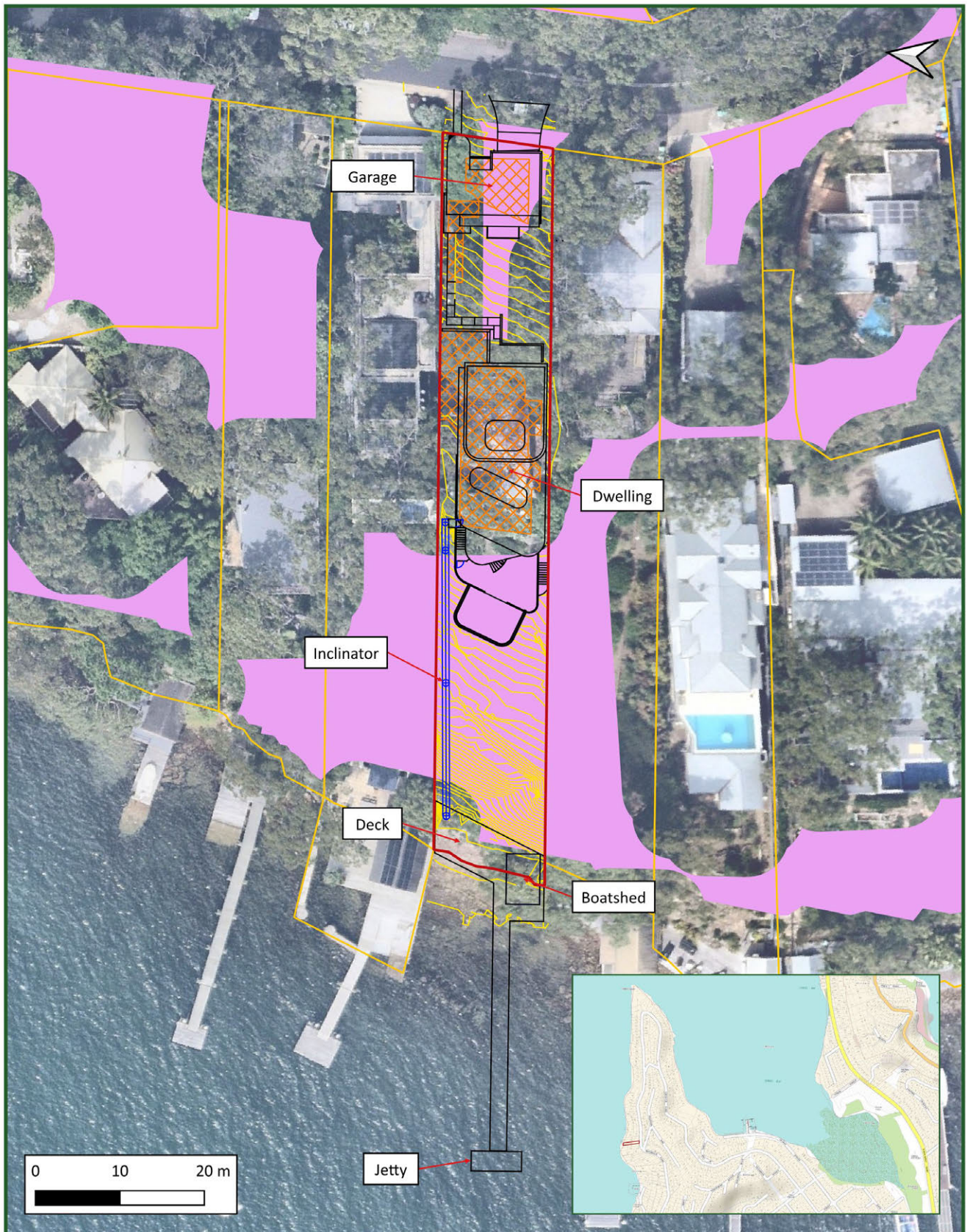
1.2.2 Biodiversity Values Map

Clearing any native vegetation within an area mapped on the Biodiversity Values Map will trigger the requirement to prepare a BDAR for a development application under Part 4 of the EP&A Act (local development).

The subject land contains areas mapped on the Biodiversity Values Map. The proposal would require clearing of native vegetation within the mapped biodiversity values area, as shown in Figure 1.3.

1.2.3 Assessment method

The proposal has been assessed under the BAM Streamlined Assessment Module – Small Area, which may be used in accordance with the area clearing threshold shown in Table 12 of the BAM (being a minimum lot size of less than 1 hectare and clearing of less than 1 hectare).



Legend

- | | | |
|---|--|---|
| Subject land | Development layout | Biodiversity Values Map |
| Cadastre | Inclinator | |
| Contour | Excavation | |

133 Riverview Road, Avalon Beach

Figure 1.3. Biodiversity Values Map.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:570

1.3 Matters of national environmental significance

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is Australia's primary national environmental legislation. It provides for the protection and management of nationally and internationally significant plants, animals, habitats and places. The EPBC Act refers to these living things, habitats and places as matters of national environmental significance (MNES). MNES include:

- World Heritage areas
- Commonwealth Heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and listed ecological communities
- listed migratory species (protected under international agreements)
- Commonwealth marine areas
- Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)

Under the EPBC Act, an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on any of the above MNES. The general test for significance is whether an impact is 'important, notable or of consequence, having regard to its context or intensity'.

Appendix II provides an assessment against the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DoE 2013) for threatened species and migratory species that could utilise the subject land.

Based on the assessment, it is not likely that the proposed development will have a significant impact on any MNES listed under the EPBC Act. Referral of the development application to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is therefore not warranted.

1.4 Information sources

Information sources and spatial data used to inform this BDAR have been compiled from various sources including:

- Aerial imagery of the site and surrounding locality (Nearmap and [Historical Imagery Viewer](#))
- Biodiversity Assessment Method 2020 (BAM)
- Biodiversity Assessment Method 2020 Operational Manual – Stage 1
- Biodiversity Assessment Method Operational Manual Stage 2
- Biodiversity Values Map ([Biodiversity Values Map Current Edition](#))
- [Biodiversity Values Map and Threshold Tool](#)
- BioNet Threatened Biodiversity Data Collection (TBDC)
- Directory of Important Wetlands in Australia ([Directory of Important Wetlands](#))
- [Descriptions for NSW \(Mitchell\) Landscapes Version 2 \(2002\)](#)
- eSPADE ([eSPADE v2.2](#))
- [Koala \(*Phascolarctos cinereus*\): Biodiversity Assessment Method Survey Guide](#)
- [Native Vegetation Regulatory Map](#)
- NSW Cadastre ([NSW Cadastre Web Service](#))
- NSW (Mitchell) Landscapes ([NSW \(Mitchell\) Landscapes Version 3.1](#))
- [NSW Hydrography](#) (Rivers, streams, estuaries and wetlands)
- NSW Interim Biogeographic Regions of Australia (IBRA) ([IBRA Version 7 Subregions](#))
- NSW State Vegetation Type Map ([NSW State Vegetation Type Map Current Edition](#))
- OEH Threatened Biodiversity Profile Search (<https://threatenedspecies.bionet.nsw.gov.au/>)
- PlantNET (<https://plantnet.rbgsyd.nsw.gov.au/>)
- [SEED Data Portal](#)
- Soil Landscapes ([Soil Landscapes of Central and Eastern NSW](#))

- [Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method](#)
- ['Species credit' threatened bats and their habitats – NSW survey guide for the Biodiversity Assessment Method](#)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft, November 2004) (Department of Environment and Conservation, DEC)
- Anecdotal records

Additionally, the following database searches were conducted:

- NSW BioNet Atlas: A review of flora and fauna records held by the Department of Planning, Industry and Environment (DPIE), within a 10-kilometre radius of the subject land.
- Protected Matters Search Tool: A review of flora and fauna records held by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), within a 5-kilometre radius of the subject land.

2 Methods

2.1 Landscape features

2.1.1 Landscape features

An investigation of the subject land and assessment area was undertaken in accordance with Section 3.1 of the BAM (DPE 2020) to provide context for the landscape features detailed in Section 3.2.

The assessment area was established using GIS software to include the subject land and a 1,500 m buffer surrounding its boundary.

2.1.2 Native vegetation cover

Native vegetation cover and habitat connectivity have been assessed in relation to native vegetation cover across the broader area, as per Sections 3.1.3 and 3.2 of the BAM (DPE 2020).

The extent of native vegetation cover was used to assess the habitat suitability of the subject land for threatened species. Areas of connectivity were used to determine the extent of habitat that may facilitate the movement of threatened species across their range.

Areas of native vegetation were confirmed using information collected during the site assessment, as well as the latest Nearmap aerial imagery, with reference to the NSW State Vegetation Type Map (DPE 2022).

2.2 Native vegetation, threatened ecological communities and vegetation integrity

2.2.1 Existing information

A review of the NSW State Vegetation Type Map (DPE 2022) was undertaken to assist in identifying the Plant Community Types (PCTs) within and surrounding the subject land. The NSW State Vegetation Type Map identifies PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest within the subject land.

The best-fit PCT was determined based on the floristic attributes and descriptions within the BioNet Vegetation Classification database, as well as the vegetation plot data collected during field surveys. The BioNet Vegetation Classification PCT Filter Tool, with reference to previous vegetation mapping, was also used to assist in the identification of PCTs.

2.2.2 Mapping native vegetation extent

The extent of native vegetation within the subject land was confirmed using information collected during the field assessment, as well as the latest Nearmap aerial imagery.

2.2.3 Plot-based vegetation survey

A systematic plot-based floristic vegetation survey was undertaken in accordance with BAM Subsection 4.2.1. The sampling plot location was selected as representative of the type and condition of vegetation proposed to be impacted by the development.

2.2.4 Vegetation integrity survey

Plot-based floristic vegetation surveys were conducted by Brooke Thompson on 21 May 2024, in accordance with Section 4.2 of the BAM, to identify the presence and extent of PCTs across the subject land and to establish a quantitative baseline for assessing vegetation condition.

A standard 20 m x 50 m plot was not suitable for the subject land. Where a standard plot cannot fit within a vegetation zone, a longer and narrower, or wider and shorter plot may be used, as outlined in Section 3.4.1 of the BAM Operational Manual – Stage 1 (DPIE 2020).

For this survey, one 400 m² plot (standard 20 m x 20 m) was used to assess composition and structure attributes within the front yard. The 1000 m² plot (standard 20 m x 50 m) used to assess functional attributes was split between the front and rear yards, with a 20 m x 20 m plot in the front and a 20 m x 30

m plot in the rear. Five 1 m² subplots were used to assess average ground layer components such as litter cover, bare ground, cryptogams and rock.

All native and exotic flora species observed were identified to the lowest practicable taxonomic level. Where identification was uncertain in the field, voucher specimens were collected for later verification using appropriate botanical keys and references.

Surveys were conducted during optimal seasonal windows to maximise detectability of native species, with suitable weather conditions observed throughout the survey periods.

Floristic data collected from the plots were used to verify PCT classification, assess vegetation condition against BAM condition benchmarks, and delineate vegetation zones based on structural and compositional similarity.

One floristic plot was sampled across the subject land. Full vegetation survey data are presented in Appendix III.

2.3 Threatened flora survey methods

2.3.1 Review of existing information

A list of threatened flora species and associated habitat constraints and geographic limitations predicted to occur within the subject land was automatically generated using the BAM-C, based on site context including the IBRA region and subregion, predicted PCTs and the NSW (Mitchell) Landscape.

Aerial imagery, soil landscape maps, contour maps and vegetation maps were also reviewed to identify potential habitat constraints for threatened species.

Habitat constraints and microhabitat features were further identified and considered during the field assessment.

2.3.2 Habitat constraints assessment

Using the existing information (Section 2.3.1), field assessments were undertaken to confirm the presence of associated habitat and microhabitat constraints.

Hollow-bearing trees (HBTs) were recorded, and any other potential habitat features such as stick nests, rocks and large woody debris were noted and used to inform any targeted threatened fauna surveys required. Transects were walked across the subject land to ensure any habitat constraints were identified.

2.3.3 Field surveys

Field surveys were conducted on 21 May 2024, including the collection of BAM plot data, habitat assessment and targeted searches for threatened species relevant at the time of the assessment.

Flora surveys were conducted in accordance with the Department of Planning, Industry and Environment's *Surveying Threatened Plants and Their Habitats – NSW Survey Guide for the Biodiversity Assessment Method 2020*. Search effort was reduced in areas heavily dominated by exotic weed species that would preclude the presence of the target species.

Ecologists conducted walking transects across the subject land to search for threatened species or suitable habitat for those species.

2.4 Threatened fauna survey methods

2.4.1 Review of existing information

A list of threatened fauna species, along with associated habitat constraints and geographic limitations predicted to occur within the subject land, was automatically generated using the BAM-C, based on site context including the IBRA region and subregion, NSW (Mitchell) Landscape and PCTs.

Soil mapping and topography were also reviewed to provide further context on habitat constraints for threatened fauna.

Habitat constraints and microhabitat features were further identified and considered during the field assessment.

2.4.2 Habitat constraints assessment

The likelihood of threatened species occurring within the subject land was informed by field surveys and the presence of suitable habitat. Field surveys focused on searches for habitat constraints (e.g. water bodies, rocky areas, tree hollows), including microhabitats, present within the subject land and immediate surrounds. Potential habitat constraints within the broader area (1,500 m buffer) were assessed using soil data, topography and recent vegetation mapping.

Field survey and flora transects enabled further identification of habitat constraints and microhabitats.

2.4.3 Field surveys

Field surveys included walked transects to search for listed species or to assess habitat values or constraints associated with each species, as relevant at the time of the assessment.

Threatened species searches were undertaken in accordance with BAM guidance materials listed in Section 1.4.2. Surveys focused on targeted assessments, conducted within the BAM-recommended survey period for each species.

2.5 Weather conditions

Table 2.1 documents the weather conditions on the days of the surveys, as recorded by the Terry Hills AWS and Mona Vale Golf Club weather stations.

Table 2.1. Environmental conditions during threatened species surveys.

Survey undertaken (e.g., method / targeted species)	Date	Time	Temperature (min. & max.)	Wind (light, mod...)	Rainfall (mm)
BAM plots, species/habitat transects	21 May 2024	Morning	10.9 – 17.6	Light	2.2

2.6 Limitations

Limitations of the study may arise where certain cryptic species of plants occur as soil-stored seeds or subterranean vegetation structures. Some species are only identifiable above ground after specific environmental circumstances, such as periodic fire frequency, intensity or seasonality, soil moisture regimes, and biological life-cycle patterns (as is the case for small plants such as certain orchid species).

Surveys, even when conducted over the course of one year, cannot be expected to detect all species present or likely to occur in the study area. This is because some species may: (a) occur seasonally, (b) utilise different areas periodically (as part of a larger home range), or (c) become dormant during specific periods of the year.

3 Site context

3.1 Assessment area

The assessment area includes the subject land and a 1,500 m buffer around its boundary.

3.2 Landscape features

Landscape features identified within the assessment area are shown in Figure 3.1. A discussion of relevant landscape features is provided below in Table 3.1.

Table 3.1. Landscape features.

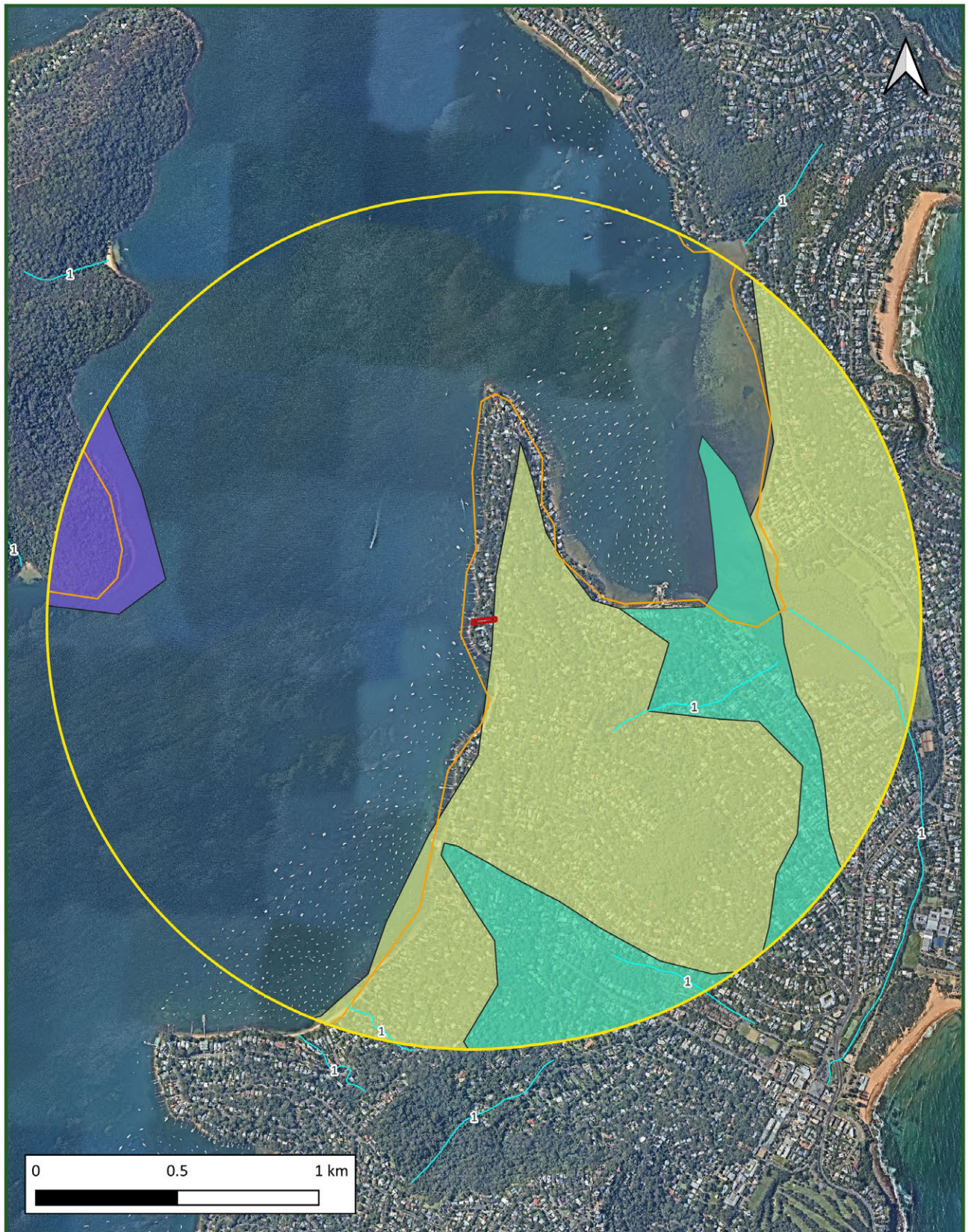
IBRA Bioregion	Sydney Basin
IBRA Sub-region	Pittwater
NSW (Mitchell) landscape	Belrose Coastal Slopes
Topography	The subject land is characterised by a steep westward slope, descending from approximately 40 metres Australian Height Datum (AHD) at the Riverview Road frontage to 0 metres AHD at the western boundary, where it directly interfaces with the Pittwater waterway.
Geology and soils	A review of soil landscape mapping accessed via eSPADE v2.2 indicates that the subject land is situated within the Watagan soil landscape. This landscape is characterised by rolling to very steep hills developed on fine-grained Narrabeen Group sediments, which include interbedded laminite, shale, and quartz to lithic quartz sandstone. The topography features local relief of 60–120 metres with slopes exceeding 25%, and commonly presents narrow convex ridgelines, steep colluvial sideslopes, and occasional sandstone boulders, benches, and scarps. Soil types vary according to the underlying geology. On sandstone, soils comprise shallow to deep Lithosols and Yellow Podzolic Soils, while shale substrates support moderately deep Brown, Red, and Gleyed Podzolic Soils, with soil depths ranging from approximately 30 cm to over 200 cm. The Watagan soil landscape presents notable constraints to development, including steep slopes, high erosion potential, and susceptibility to landslip and rockfall, particularly where soils are disturbed or become saturated.
Rivers, streams, estuaries and wetlands	The subject land does not contain any rivers, streams, estuaries, or wetlands; however, it directly adjoins the Pittwater waterway along its western boundary.
Habitat connectivity	The vegetation on the subject land provides canopy connectivity between remnant patches of trees and vegetation located on neighbouring properties within the locality.
Karst, caves, crevices, cliffs, rocks and other geological features of significance	The subject land contains sandstone boulders but lacks any karst formations, caves, crevices, or geologically significant cliffs. Cliffs with rocky overhangs are present within 2 kilometres of the site in Ku-ring-gai Chase National Park and represent a habitat constraint for cave-dwelling microbats.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value within the subject land or assessment area.

3.3 Native vegetation cover

Table 3.2 summarises the extent of native vegetation cover within the assessment area. Native vegetation cover within the assessment area is shown in Figure 3.2.

Table 3.2. Native vegetation cover in the assessment area.

Assessment area (ha)	738.21
Total area of native vegetation cover (ha)	124.87
Percentage of native vegetation cover (%)	17%
Class (0-10, 10-30, 30-70 or >70%)	10-30



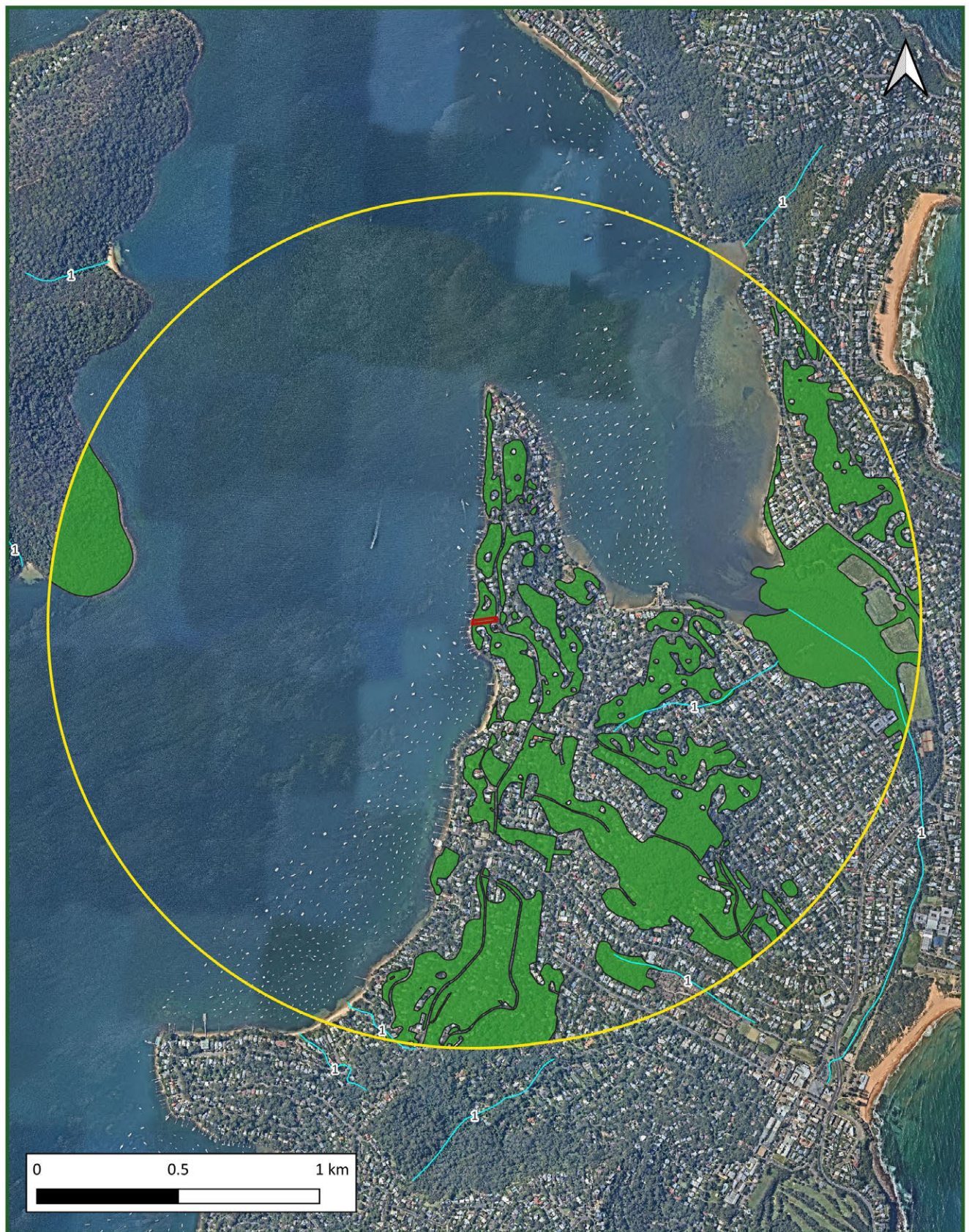
Legend

- | | | |
|---|--|--|
| Subject land | IBRA subregion | NSW Mitchell landscape |
| Assessment area | Pittwater | Belrose Coastal Slopes |
| — Watercourse | Hornsby Plateau | Sydney - Newcastle Barriers and Beaches |

133 Riverview Road, Avalon Beach

Figure 3.1. Landscape assessment.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Data source: BioNet Atlas
Scale: 1:17000



Legend

- Subject land
- Assessment area
- Watercourse
- Native vegetation cover

133 Riverview Road, Avalon Beach

Figure 3.2. Native vegetation cover.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Data source: BioNet Atlas
Scale: 1:17000

4 Native vegetation, threatened ecological communities and vegetation integrity

4.1 Native trees

A total of twenty-eight (28) native trees were identified within the site, as documented in the Arboricultural Impact Assessment (Blue Bros Arboriculture, 16 May 2025) and summarised in Table 4.1.

Table 4.1. Native trees identified within the subject land.

Tree ID	Scientific name	Common name
1	<i>Eucalyptus robusta</i>	Swamp Mahogany
2	<i>Angophora costata</i>	Sydney Red Gum
3	<i>Angophora costata</i>	Sydney Red Gum
4	<i>Angophora costata</i>	Sydney Red Gum
5	<i>Angophora costata</i>	Sydney Red Gum
6	<i>Glochidion ferdinandi</i>	Cheese Tree
7	<i>Glochidion ferdinandi</i>	Cheese Tree
8	<i>Angophora costata</i>	Sydney Red Gum
9	<i>Corymbia maculata</i>	Spotted Gum
11	<i>Corymbia maculata</i>	Spotted Gum
12	<i>Elaeocarpus reticulatus</i>	Blueberry Ash
13	<i>Eucalyptus paniculata</i>	Grey Ironbark
14	<i>Corymbia maculata</i>	Spotted Gum
15	<i>Corymbia maculata</i>	Spotted Gum
16	<i>Allocasuarina torulosa</i>	Forest Sheoak
17	<i>Corymbia maculata</i>	Spotted Gum
18	<i>Allocasuarina littoralis</i>	Black Sheoak
19	<i>Acacia sp</i>	<i>Acacia sp</i>
20	<i>Glochidion ferdinandi</i>	Cheese Tree
22	<i>Acacia sp</i>	<i>Acacia sp</i>
23	<i>Eucalyptus paniculata</i>	Grey Ironbark
24	<i>Corymbia maculata</i>	Spotted Gum
25	<i>Pittosporum undulatum</i>	Sweet Pittosporum

Tree ID	Scientific name	Common name
26	<i>Brachychiton acerifolius</i>	Illawarra Flame
28	<i>Corymbia maculata</i>	Spotted Gum
30	<i>Corymbia maculata</i>	Spotted Gum
31	<i>Corymbia maculata</i>	Spotted Gum
32	<i>Brachychiton acerifolius</i>	Illawarra Flame

4.2 Native vegetation extent

The subject land is a steeply sloping waterfront lot with an existing residential dwelling situated on a concrete platform approximately midway down the site. The top of the lot features a partly concrete, partly dirt area used for parking and bin storage. A pathway begins on the southern side at the parking area and crosses to the northern boundary, descending towards the dwelling. The backyard, located on the waterfront side, slopes steeply toward the water's edge.

The front yard contains a mix of native and ornamental trees, clearings, and landscaped garden patches. The canopy is dominated by *Corymbia maculata* (Spotted Gum) and *Eucalyptus paniculata* (Grey Ironbark). The sub-canopy includes *Elaeocarpus reticulatus* (Blueberry Ash), *Allocasuarina torulosa* (Forest Sheoak), *Allocasuarina littoralis* (Black Sheoak), and *Glochidion ferdinandi* (Cheese Tree). Landscaped garden patches are composed primarily of exotic species, including *Plumeria spp.* (Frangipani), *Strelitzia spp.* (Bird of Paradise), *Magnolia spp.*, *Syngonium podophyllum* (Arrowhead Plant), *Monstera deliciosa* (Swiss Cheese Plant), *Nephrolepis cordifolia* (Fishbone Fern), *Agapanthus spp.* (Agapanthus), and *Aechmea spp.* Clearings across the site contain a mix of native and exotic groundcovers, along with areas of leaf litter and bare ground.

The Council street verge supports a canopy of *Spotted Gum*, *Grey Ironbark*, and *Jacaranda mimosifolia* (Jacaranda). The sub-canopy includes *Pittosporum undulatum* (Sweet Pittosporum) and *Brachychiton acerifolius* (Illawarra Flame Tree), with an understorey of leaf litter and bare ground.

The backyard consists of cleared grassy areas, patches of bare ground and leaf litter, sandstone boulders, scattered landscaping features, and logs. A significant habitat tree, *Angophora costata* (Sydney Red Gum), is located on the shared boundary between 133 and 131 Riverview Road. A planted Jacaranda is located at the north-western corner of the dwelling.

The foreshore area features a steep drop-off to the water's edge. The upper stratum includes *Eucalyptus robusta* (Swamp Mahogany) and *Angophora costata*. The sub-canopy comprises *Glochidion ferdinandi* and *Allocasuarina* species. The mid-stratum includes *Acacia spp.*, *Westringia fruticosa*, *Macrozamia communis*, and *Xanthorrhoea spp.* The understorey supports a predominantly native groundcover of ferns, grasses, and vines, including *Pteridium esculentum* (Bracken), *Imperata cylindrica* (Blady Grass), *Themeda australis* (Kangaroo Grass), *Lomandra longifolia*, *Smilax spp.*, and *Cayratia clematidea*.

Weeds present within the foreshore and cliff areas include local priority species such as *Asparagus aethiopicus* (Asparagus Fern), *Lantana camara*, and *Bryophyllum spp.* (Mother of Millions). Environmental weeds observed include *Nephrolepis cordifolia* (Fishbone Fern).

The area of native vegetation within the subject land has been calculated as 0.09 hectares.



Legend

- | | |
|--|---|
| Subject land | Cleared |
| Native vegetation | Rock |

133 Riverview Road, Avalon Beach

Figure 4.1. Native vegetation extent.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400



Photo 1. View of BAM plot at 0 m, showing the site frontage along Riverview Road.



Photo 2. Native trees along the road frontage include *Corymbia maculata*, *Eucalyptus paniculata*, and *Brachychiton acerifolius*.



Photo 3. Road frontage vegetation including native *Corymbia maculata* and *Pittosporum undulatum*. Exotic groundcover species *Ehrharta erecta* present.



Photo 4. End point of the existing driveway.



Photo 5. Bare ground along road frontage with exotic *Ehrharta erecta*.

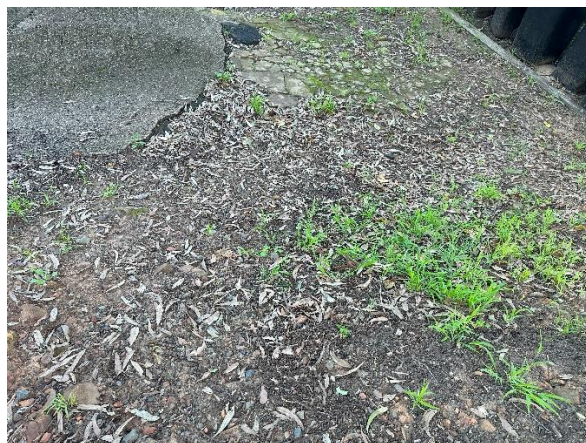


Photo 6. Bare ground along road frontage with exotic *Ehrharta erecta*.



Photo 7. Existing pathway from Riverview Road to the dwelling, with landscaping dominated by exotic species.



Photo 8. Canopy cover within the BAM plot.



Photo 9. Canopy cover within the BAM plot.



Photo 10. Existing landscaping dominated by exotic *Aechmea* spp., *Alstroemeria* spp., and *Agapanthus* spp.



Photo 11. Bare ground between pathway and Riverview Road, with vegetation cover increasing toward the dwelling.



Photo 12. Native groundcover vegetation increases in cover closer to the existing dwelling beyond the tree line. The area between the trees and the pathway remains dominated by exotic species.



Photo 13. Exotic landscaping and increased leaf litter between Riverview Road and the pathway.

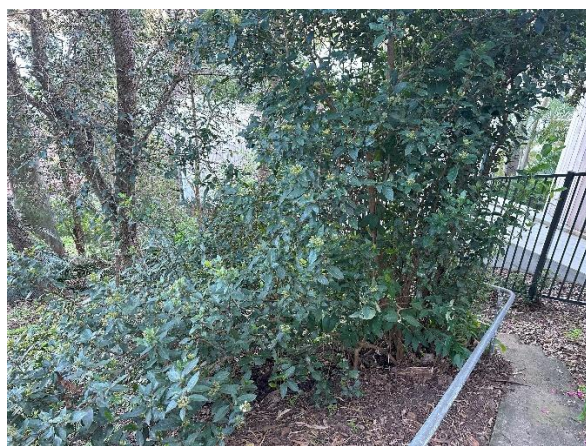


Photo 14. Native *Glochidion ferdinandi* with exotic *Cinnamomum camphora* and *Ligustrum lucidum* near the pathway.

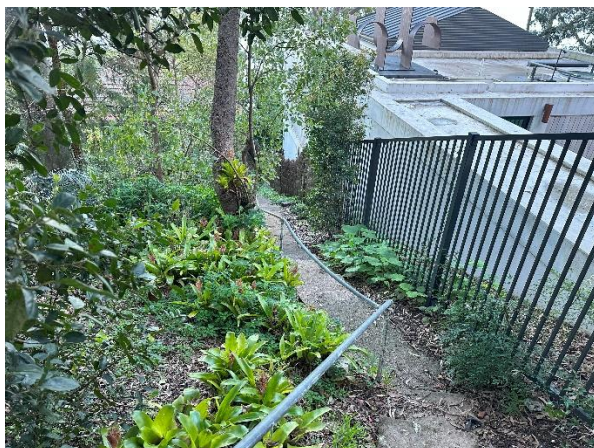


Photo 15. Access from Riverview Road to the existing dwelling.



Photo 16. Exotic *Aechmea* spp. and *Alstroemeria* spp. dominant in landscape plantings.



Photo 17. Exotic species including *Aechmea* spp. and *Alstroemeria* spp. continue to dominate the landscaped garden.



Photo 18. Mixed native and exotic landscaping featuring *Monstera* spp. and *Nephrolepis cordifolia* as dominant species.



Photo 19. BAM plot looking west toward Pittwater. Native *Macrozamia communis* present; groundcover includes a mix of native and exotic species (*Ehrharta erecta*, *Alstroemeria* spp., *Asparagus aethiopicus*).



Photo 20. *Eucalyptus paniculata*, *Corymbia maculata*, exotic bamboo, and native groundcovers (*Dichondra repens*, *Commelina cyanea*) within BAM plot.



Photo 21. Groundcover diversity within BAM plot includes *Lobelia purpurascens*, *Dichondra repens*, *Commelina cyanea*, and *Microlaena stipoides*.



Photo 22. Native canopy diversity with *Allocasuarina torulosa*, *Allocasuarina littoralis*, *Corymbia maculata*, *Eucalyptus paniculata*, and *Glochidion ferdinandi*.



Photo 23. Groundcover within BAM plot.



Photo 24. BAM plot at 50 m, looking toward existing dwelling. Large hollow-bearing tree (*Angophora costata*, identified as PT8) to be retained.



Photo 25. BAM plot looking west toward Pittwater, along midline transect.



Photo 26. Mixed native and exotic groundcover between dwelling and Pittwater.



Photo 27. Landscaping with mixed plantings including *Agave* spp., *Westringia* spp., and *Lomandra* spp.



Photo 28. Native foreshore vegetation in good condition. *Lantana camara* is present and recommended for removal.

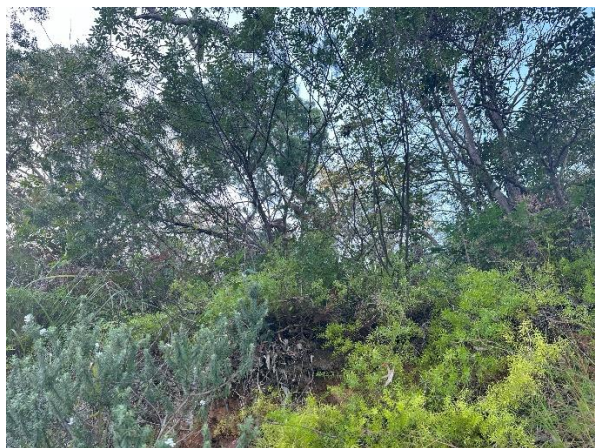


Photo 29/30. Foreshore vegetation includes a wide variety of native species: *Angophora costata*, *Corymbia maculata*, *Eucalyptus robusta*, *Glochidion ferdinandi*, *Acacia longifolia*, *Persoonia linearis*, *Westringia* spp., *Elaeocarpus reticulatus*, *Lomandra longifolia*, *Xanthorrhoea* spp., *Hardenbergia violacea*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Themeda australis*, *Pteridium esculentum*, *Lobelia purpurascens*, *Macrozamia communis*, *Oplismenus aemulus*, and others.



Photo 31. Hollow-bearing tree (*Angophora costata*, PT8 from arborist report) within BAM plot, proposed for retention.



Photo 32. Habitat logs (13 m total length) located within BAM plot; retention on site is recommended.



Photo 33. Existing landscaped area on the southern side of the dwelling.



Photo 34. Continued view of exotic-dominated landscaping on the southern side of the dwelling.

4.3 Plant community types

4.3.1 Overview

Vegetation within the subject land has been assessed as aligning with the BioNet Vegetation Classification PCTS identified in Table 4.1 and their extent is shown in Figure 4.2.

Table 4.2. PCTs identified within the subject land.

PCT ID	PCT name	Subject land area (ha)
3234	Hunter Coast Lowland Spotted Gum Moist Forest	0.09
Total area		0.09

4.3.2 PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest

4.3.2.1 PCT overview

Table 4.2 presents data contained within the BioNet Vegetation Classification for PCT 3234, and data obtained for the subject land.

Table 4.3. PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest

PCT ID	3234
PCT name	Hunter Coast Lowland Spotted Gum Moist Forest
Vegetation formation	Wet Sclerophyll Forests (Grassy sub-formation)
Vegetation class	Northern Hinterland Wet Sclerophyll Forests
Per cent cleared value (%)	28
Extent within subject land (ha)	0.09

4.3.2.2 Condition states

This PCT occurs in one condition state – Moderate, with a VI score of 45.1.



Legend

- Subject land
- PCT 3234
- Plot 400 sqm
- Cleared
- Plot midline
- Rock
- HBT

133 Riverview Road, Avalon Beach

Figure 4.2. Plant community types.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400

4.3.2.3 Justification of PCT selection

The BAM requires identification of the PCT, or the most likely PCTs, present on the subject land. This must be undertaken in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification database. In addition, all TECs present must be identified, with classification consistent with the Final Determinations issued by the NSW Threatened Species Scientific Committee under the BC Act.

Table 4.4 outlines the search criteria entered into the BioNet Vegetation Classification PCT Filter Tool to identify potential PCTs.

Table 4.5 presents an analysis of the floristic composition and landscape position of the BAM plot data, compared with the potential PCT data from the BioNet Vegetation Classification.

Table 4.4. Selected search criteria for potential PCT selection.

Search term	Selected search criteria
IBRA region	Sydney Basin
IBRA subregion	Pittwater
Vegetation formation	Wet Sclerophyll Forests (Grassy sub-formation)
Dominant species	Upper stratum: <i>Angophora costata</i> , <i>Corymbia maculata</i> , <i>Eucalyptus paniculata</i> , <i>Allocasuarina littoralis</i> , <i>Allocasuarina torulosa</i>
	Mid stratum: <i>Elaeocarpus reticulatus</i> , <i>Glochidion ferdinandi</i> , <i>Notelaea longifolia</i> , <i>Pittosporum undulatum</i> , <i>Persoonia linearis</i>
Potential PCTs	3230, 3234, 3242, 3262

Table 4.5. PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest.

Potential PCTs	PCT 3230 – Central Coastal Escarpment Moist Forest	PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest	PCT 3242 – Lower North Ranges Turpentine Moist Forest	PCT 3262 – Sydney Turpentine Ironbark Forest
Listed Key Diagnostic Species	Upper: <i>Syncarpia glomulifera</i>, <i>Angophora floribunda</i> Mid: <i>Allocasuarina torulosa</i>, <i>Persoonia linearis</i>, <i>Breynia oblongifolia</i>, <i>Platysace lanceolatus</i>, <i>Myrsine variabilis</i>, <i>Synoum glandulosum</i>, <i>Livistona australis</i> Ground: <i>Pteridium esculentum</i>, <i>Calochlaena dubia</i>, <i>Blechnum cartilagineum</i>, <i>Eustrephus latifolius</i>, <i>Imperata cylindrica</i>, <i>Entolasia stricta</i>, <i>Microlaena stipoides</i>, <i>Dianella caerulea</i>, <i>Lomandra longifolia</i>	Upper: <i>Corymbia maculata</i> (commonly high cover), <i>Eucalyptus paniculata</i>, <i>Eucalyptus umbra</i>, <i>Angophora costata</i>, <i>Syncarpia glomulifera</i> Mid: <i>Allocasuarina torulosa</i>, <i>eucalypts</i>, <i>Pittosporum undulatum</i>, <i>Glochidion ferdinandi</i>, <i>Allocasuarina littoralis</i>, <i>Livistona australis</i>, <i>Breynia oblongifolia</i>, <i>Notelaea longifolia</i>, <i>Pittosporum undulatum</i>, <i>Pittosporum revolutum</i>, <i>Myrsine variabilis</i> Ground: <i>Eustrephus latifolius</i>, <i>Pandorea pandorana</i>, <i>Imperata cylindrica</i>, <i>Entolasia stricta</i>, <i>Oplismenus imbecillis</i>, <i>Pteridium esculentum</i>, <i>Dianella caerulea</i>, <i>Lomandra longifolia</i>	Upper: <i>Syncarpia glomulifera</i>, <i>Eucalyptus acmenoides</i>, <i>Eucalyptus saligna</i>, <i>Eucalyptus paniculata</i> Mid: <i>Allocasuarina torulosa</i>, <i>Acacia maidenii</i>, <i>Breynia oblongifolia</i>, <i>Synoum glandulosum</i>, <i>Denhamia silvestris</i>, <i>Persoonia linearis</i>, <i>Glochidion ferdinandi</i>, <i>Livistona australis</i> Ground: <i>Smilax australis</i>, <i>Geitonoplesium cymosum</i>, <i>Pandorea pandorana</i>, <i>Eustrephus latifolius</i>, <i>Dioscorea transversa</i>, <i>Lomandra longifolia</i>, <i>Doodia aspera</i>, <i>Gymnostachys anceps</i>, <i>Pteridium esculentum</i>, <i>Adiantum aethiopicum</i>, <i>Calochlaena dubia</i>	Upper: <i>Syncarpia glomulifera</i>, <i>Eucalyptus pilularis</i>, <i>Angophora costata</i>, <i>Eucalyptus punctata</i> Mid: <i>Acacia parramattensis</i>, <i>Allocasuarina torulosa</i>, <i>Allocasuarina littoralis</i>, <i>Pittosporum undulatum</i>, <i>Leucopogon juniperinus</i>, <i>Breynia oblongifolia</i>, <i>Polyscias sambucifolia</i>, <i>Ozothamnus diosmifolius</i>, <i>Notelaea longifolia</i> Ground: <i>Microlaena stipoides</i>, <i>Entolasia stricta</i>, <i>Imperata cylindrica</i>, <i>Entolasia marginata</i>, <i>Themeda triandra</i>, <i>Lobelia purpurascens</i>, <i>Lomandra longifolia</i>
Present Key Diagnostic Species	Upper: <i>Angophora costata</i> Mid: <i>Allocasuarina torulosa</i>, <i>Persoonia linearis</i> Ground: <i>Pteridium esculentum</i>, <i>Eustrephus latifolius</i>, <i>Imperata cylindrica</i>, <i>Microlaena stipoides</i>, <i>Lomandra longifolia</i>	Upper: <i>Corymbia maculata</i>, <i>Eucalyptus paniculata</i>, <i>Angophora costata</i> Mid: <i>Allocasuarina torulosa</i>, <i>Allocasuarina littoralis</i>, <i>Pittosporum undulatum</i>, <i>Glochidion ferdinandi</i>, <i>Notelaea longifolia</i> Ground: <i>Eustrephus latifolius</i>, <i>Pandorea pandorana</i>, <i>Imperata cylindrica</i>, <i>Pteridium esculentum</i>, <i>Lomandra longifolia</i>	Upper: <i>Eucalyptus paniculata</i> Mid: <i>Allocasuarina torulosa</i>, <i>Persoonia linearis</i>, <i>Glochidion ferdinandi</i> Ground: <i>Geitonoplesium cymosum</i>, <i>Pandorea pandorana</i>, <i>Eustrephus latifolius</i>, <i>Lomandra longifolia</i>, <i>Pteridium esculentum</i>	Upper: <i>Angophora costata</i> Mid: <i>Allocasuarina torulosa</i>, <i>Allocasuarina littoralis</i>, <i>Pittosporum undulatum</i>, <i>Notelaea longifolia</i> Ground: <i>Microlaena stipoides</i>, <i>Imperata cylindrica</i>, <i>Lobelia purpurascens</i>, <i>Lomandra longifolia</i>, <i>Themeda australis</i>

Potential PCTs	PCT 3230 – Central Coastal Escarpment Moist Forest	PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest	PCT 3242 – Lower North Ranges Turpentine Moist Forest	PCT 3262 – Sydney Turpentine Ironbark Forest
Landscape Position	Narrabeen sandstone slopes and escarpments; commonly lower slopes above flooded valleys (Hawkesbury, Pittwater)	Sheltered escarpments and low hills of Permo-Triassic sandstone across coastal lowlands; typically on low-lying Narrabeen sandstone landscapes	Sheltered slopes of coastal hills and ranges	Shale or sheltered shale-sandstone soils in urban mosaics; mainly in higher rainfall zones of the northern Sydney suburbs and lower Blue Mountains
Vegetation Description	Tall to very tall sclerophyll open forest with a sparse mid-stratum of mesophyll and sclerophyll shrubs, and a fern- and grass-dominated ground layer	Tall to very tall sclerophyll open forest with a mesophyll mid-stratum and a diverse ground layer of grasses, graminoids and small climbers	Very tall to extremely tall sclerophyll open forest with a mesophyll shrub layer and a moist, diverse ground layer of ferns, climbers, and grasses	Tall to very tall sclerophyll open forest with mixed mesophyll and sclerophyll shrubs in the mid-stratum and a diverse grassy/forb ground layer
Elevation	Primarily low elevation	Low elevation coastal hills and escarpments	Low to mid-elevation	Typically mid-elevation urban landscapes (no specific elevation given, but includes hills and plateaus)
Geographic Restrictions	Found in the lower Hawkesbury, Pittwater, Brisbane Waters and Watagan Ranges (Central Coast)	Coastal zone between Pittwater and the Karuah River, including Bouddi, Wamberal, Wagstaff, Lake Macquarie, Newcastle, and Nelson Bay (Karuah River outliers)	Found from Gosford to Taree (Hunter and lower North Coast IBRA regions) South of Hunter: Common on Narrabeen sediments in the Watagan Range North of Hunter: Occurs on Carboniferous sediments in the Myall Ranges near Gloucester Restricted to incised gullies in lower rainfall areas west of Kulnura	Northern Sydney suburbs (Baulkham Hills to Ku-ring-gai), also found in Sutherland, Heathcote, Menai, lower Blue Mountains, Oakdale Plateau, and isolated pockets in eastern Cumberland Plain (e.g. Villawood to Bankstown)
Soil Profiles	Typically on Narrabeen sandstone, occasionally with residual Hawkesbury Sandstone capping	Found on Permo-Triassic (mostly Narrabeen) sandstone soils; also occurs on volcanic substrates	Typically on Narrabeen and Carboniferous sedimentary substrates	Occurs on shale or sheltered shale-sandstone soils, especially Wianamatta Group shales in high rainfall areas

Potential PCTs	PCT 3230 – Central Coastal Escarpment Moist Forest	PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest	PCT 3242 – Lower North Ranges Turpentine Moist Forest	PCT 3262 – Sydney Turpentine Ironbark Forest
		(Nerong Volcanics) and coastal Permian sediments		
PCT Selection	PCT 3262 was discarded because the upper stratum dominant species, <i>Syncarpia glomulifera</i> and <i>Angophora floribunda</i> , are absent from the study area.	PCT 3234 was selected as the best fit PCT due to the dominance of <i>Corymbia maculata</i> in the canopy and the strong presence of key diagnostic species including <i>Eucalyptus paniculata</i> , <i>Angophora costata</i> , <i>Allocasuarina torulosa</i> , <i>Glochidion ferdinandi</i> , and <i>Lomandra longifolia</i> . The subject land's low elevation, steep slopes, and Narrabeen Group geology align with the typical landscape position of PCT 3234.	PCT 3262 was discarded because the upper stratum dominant species, <i>Syncarpia glomulifera</i> , is absent from the study area.	PCT 3262 was discarded because the upper stratum dominant species, <i>Syncarpia glomulifera</i> , is absent from the study area.
Result	PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest			
Vegetation Formation	Wet Sclerophyll Forests (Grassy sub-formation)			
Vegetation Class	Northern Hinterland Wet Sclerophyll Forests			
Per cent cleared value (%)	28			
Extent within the subject land (ha)	0.09			
Alignment with TECs	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC			

Potential PCTs	PCT 3230 – Central Coastal Escarpment Moist Forest	PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest	PCT 3242 – Lower North Ranges Turpentine Moist Forest	PCT 3262 – Sydney Turpentine Ironbark Forest
Alignment with EPBC Act listed ECs	Not listed			
Condition states	PCT 3234 occurs within the subject land in a single condition state – Moderate, with a Vegetation Integrity Score (VIS) of 45.1.			

4.4 Threatened ecological communities

Table 4.6 outlines the Threatened Ecological Communities (TECs) recorded within the subject land, with their extent illustrated in Figure 4.3.

Table 4.6. TECs within the subject land.

TEC name	BC Act status	EPBC Act status	Associated vegetation zones within the subject land	Area within subject land (ha)
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Endangered	Not listed	Zone 1	0.09



Legend

- Subject land
- Pittwater Spotted Gum Forest

133 Riverview Road, Avalon Beach

Figure 4.3. Threatened ecological communities.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400

4.5 Vegetation zones

Table 4.7 details the vegetation zones and their corresponding patch sizes within the subject land, as illustrated in Figure 4.4.

Table 4.7. Vegetation zones and patch sizes.

Vegetation zone ID	PCT ID number and name	Condition / other defining features	Area (ha)	Patch size class	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
1	3234-Hunter Coast Lowland Spotted Gum Moist Forest	Moderate	0.09	>100 ha	1	1	1	1

4.6 Vegetation integrity (vegetation condition)

4.6.1 Vegetation integrity survey plots

The minimum number of plots required were completed as part of this assessment.

4.6.2 Scores

Table 4.8 provides scores for each vegetation zone. Appendix III provides full vegetation survey data.

Table 4.8. Vegetation integrity scores.

Vegetation zone ID	Condition / other defining features	Composition condition score	Structure condition score	Function condition score	Vegetation integrity score	Hollow bearing trees present?
1	Moderate	35.5	48.2	53.5	45.1	Yes

4.6.3 Use of benchmark data

Community Condition Benchmarks as per the BAM calculator (in line with the BioNet Vegetation Classification) was used to assess vegetation integrity attributes in each zone.



Legend

- Subject land
- Vegetation Zone 1 PCT 3234
Hunter Coast Lowland Spotted Gum Moist Forest
Moderate Condition

● HBT

133 Riverview Road, Avalon Beach

Figure 4.4. Vegetation zones.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400

5 Habitat suitability for threatened species

5.1 Identification of threatened species for assessment

5.1.1 Ecosystem credit species

Ecosystem credit species are those for which the likelihood of occurrence, as well as the presence of their habitat elements, can generally be predicted based on vegetation surrogates and landscape features. As such, a targeted survey is not required to identify or confirm the presence of these species. Predicted ecosystem credit species are listed in Table 5.1.

Table 5.1. Predicted ecosystem credit species.

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	Yes	BAM-C	Yes	N/A	All zones	High
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Endangered	Endangered	Yes	BAM-C	Yes	N/A	All zones	Moderate
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	Vulnerable	Vulnerable	Yes	BAM-C	Yes	N/A	All zones	High
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	Vulnerable	Vulnerable	No	BAM-C	Yes	N/A	All zones	High
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable	Endangered	No	BAM-C	Yes	N/A	All zones	High
Little Lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	High
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	High
Little Eagle	<i>Hieraaetus morphnoides</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	Moderate
White-throated Needletail	<i>Hirundapus caudacutus</i>	Vulnerable	Vulnerable	No	BAM-C	Yes	N/A	All zones	High
Black Bittern	<i>Ixobrychus flavicollis</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Yes	BAM-C	Yes	N/A	All zones	Moderate
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	Moderate
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis gularis</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Little Bent-winged Bat	<i>Miniopterus australis</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	High
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	High
Eastern Osprey	<i>Pandion cristatus</i>	Vulnerable	Not Listed	Yes	BAM-C	Yes	N/A	All zones	Moderate
Scarlet Robin	<i>Petroica boodang</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
Flame Robin	<i>Petroica phoenicea</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Not Listed	Vulnerable	No	BAM-C	Yes	N/A	All zones	High
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	Yes	BAM-C	Yes	N/A	All zones	High
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	Moderate
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	High
Rosenberg's Goanna	<i>Varanus rosenbergi</i>	Vulnerable	Not Listed	No	BAM-C	Yes	N/A	All zones	High

5.1.2 Species credit species

Species credit species are those for which the likelihood of occurrence cannot be reliably predicted based on habitat surrogates. In these cases, a targeted survey or expert report is required to confirm the presence of these species on the subject land. Table 5.2 and Table 5.3 provide a list of candidate flora and fauna species credit species, along with an indication of whether they have been retained or excluded from further assessment based on habitat constraints and/or geographic limitations.

Table 5.2. Predicted flora species credit species.

Common name	Scientific name	Listing status		Sources	SAIL entity (BAM-C & TBDC)	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i>	Vulnerable	Endangered	BAM-C	Yes	Yes	The subject land supports vegetation consistent with Pittwater Spotted Gum Forest, which may provide potential habitat for the Eastern Australian Underground Orchid. However, the species is typically found in areas with a deep layer of organic litter, which is absent from the site. There are no known records of the species within 10 km, and the site's degraded condition, due to past clearing, development, and mowing, makes its presence unlikely. It is therefore considered that the species could not have survived if it was ever present, and it is excluded from further assessment.	N/A
Scrub Turpentine	<i>Rhodamnia rubescens</i>	Critically Endangered	Critically Endangered	BAM-C	Yes	Yes	N/A	All zones
Native Guava	<i>Rhodomyrtus psidioides</i>	Critically Endangered	Critically Endangered	BAM-C	Yes	Yes	N/A	All zones

Table 5.3. Predicted fauna species credit species.

Common name	Scientific name	Listing status		Sources	SAIL entity (BAM-C & TBDC)	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Regent Honeyeater	<i>Anthochaera Phrygia</i>	Critically Endangered	Critically Endangered	BAM-C	Yes	No	Species is excluded based on habitat constraints. The subject land is not located within mapped areas of important habitat.	N/A
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	BAM-C	Yes	No	Species is excluded based on habitat constraints. The subject land is not located within mapped areas of important habitat.	N/A
Little Bent-winged Bat	<i>Miniopterus australis</i>	Vulnerable	Not Listed	BAM-C	Yes	No	Species is excluded based on habitat constraints. The subject land does not contain caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave' observation type code 'E nest-roost' with numbers of individuals >500 or from the scientific literature.	N/A
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	BAM-C	Yes	No	Species is excluded based on habitat constraints. The subject land does not contain caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding including	N/A

Common name	Scientific name	Listing status		Sources	SAIL entity (BAM-C & TBDC)	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
							species records in BioNet with microhabitat code 'IC – in cave' observation type code 'E nest-roost' with numbers of individuals >500 or from the scientific literature.	
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Endangered	BAM-C	Yes	Yes	N/A	All zones
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Vulnerable	Not Listed	BAM-C	Yes	Yes	N/A	All zones

5.2 Presence of candidate species credit species

Tables 5.4 and 5.5 present the remaining list of candidate species credit species, indicating their presence within the subject land based on the following criteria:

- Assumed presence within the subject land
- Important habitat mapping (for dual credit species)
- Targeted threatened species surveys, or
- An expert report

This approach aligns with BAM Subsection 5.2.4.

Table 5.4. Determining the presence of candidate flora species credit species on the subject land.

Common name	Scientific name	Listing status		Method used to determine presence	Present?	Further assessment required?
		BC Act	EPBC Act			
Scrub Turpentine	<i>Rhodamnia rubescens</i>	Critically Endangered	Critically Endangered	Targeted threatened species survey	No	No
Native Guava	<i>Rhodomyrtus psidioides</i>	Critically Endangered	Critically Endangered	Targeted threatened species survey	No	No

Table 5.5. Determining the presence of candidate fauna species credit species on the subject land.

Common name	Scientific name	Listing status		Method used to determine presence	Present?	Further assessment required?
		BC Act	EPBC Act			
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Endangered	Assumed present	Assumed present	Yes
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Vulnerable	Not Listed	Assumed present	Assumed present	Yes

5.3 Threatened species surveys

A targeted species survey is required for all candidate species credit species not excluded from having the potential to occur within the subject land. Surveys must be conducted during the time periods specified for each species in the TBDC guidelines.

Table 5.6 outlines the threatened species surveys undertaken for candidate species credit species.

Table 5.6. Threatened species surveys for candidate flora species credit species on the subject land.

Common name	Scientific name	Threatened flora species surveys			Present?	Further assessment required? (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)	
Scrub Turpentine	<i>Rhodamnia rubescens</i>	Transects	☒ Yes Daytime 21 May 2024	☐ No <Dates & times>	1 day, 1 ecologist	No
Native Guava	<i>Rhodomyrtus psidioides</i>	Transects	☒ Yes Daytime 21 May 2024	☐ No <Dates & times>	1 day, 1 ecologist	No

5.4 Expert reports

No expert reports were used for this assessment.

5.5 More appropriate local data (where relevant)

No local data was used for this assessment.

5.6 Area or count, and location of suitable habitat for a species credit species (a species polygon)

Table 5.7 provides a description of habitat condition for each species polygon.

Table 5.7. Results for present species (recorded within the subject land).

Common name	Scientific name	Biodiversity risk weighting (BAM-C & TBDC)	SAll entity (BAM-C & TBDC)	Habitat constraints / microhabitats present on the subject land / vegetation zone	Abundance – No. individual plants present on subject land (flora with unit of measure of count)	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (vegetation integrity score for each vegetation zone in the polygon – area species only)
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Very High (3)	Yes	The subject land provides foraging habitat for this species; however, no breeding habitat is present.	N/A	0.09	The species polygon boundary should align with all PCTs on the subject land that are within 2 kilometres of identified potential roost habitat features, and with which the species is associated (as listed in the TBDC).	Zone 1: VI – 45.1
Eastern Cave Bat	<i>Vespadelus trougtoni</i>	Very High (3)	Yes	The subject land provides foraging habitat for this species; however, no breeding habitat is present.	N/A	0.09	The species polygon boundary should align with all PCTs on the subject land that are within 2 kilometres of identified potential roost habitat features, and with which the species is associated (as listed in the TBDC).	Zone 1: VI – 45.1

Table 5.8. Results for EPBC Act listed species present (recorded within the subject land).

Common name	Scientific name	Abundance – No. individual plants present on subject land (flora with unit of measure as count)	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure as area)
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	N/A	0.09



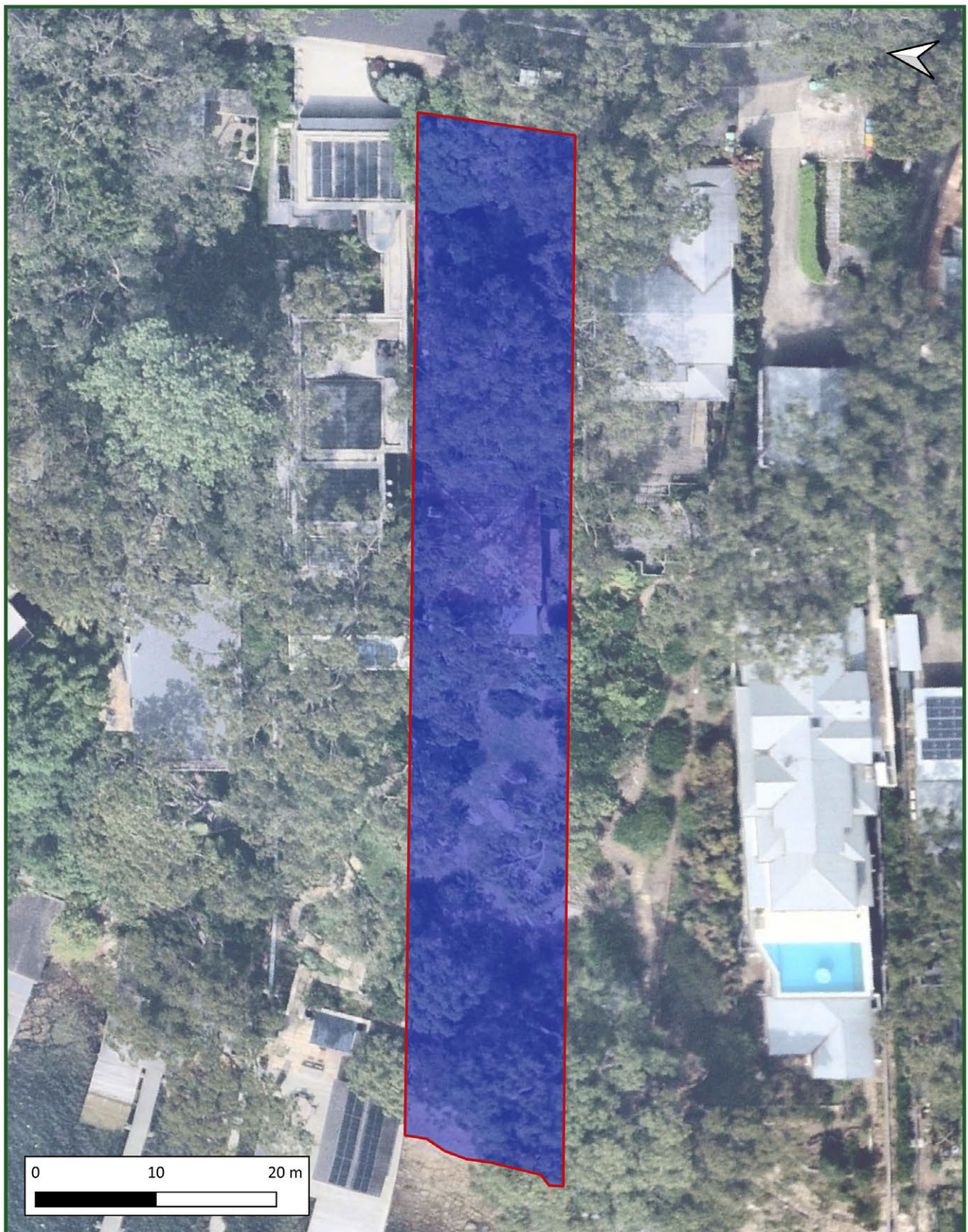
Legend

- | | |
|---|--|
| Subject land | Cliff buffer |
| 2 km buffer | ● Eastern Cave Bat |
| Cliff with rocky overhangs | ● Large-eared Pied Bat |

133 Riverview Road, Avalon Beach

Figure 5.1. Candidate species credit species records.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Data source: BioNet Atlas
Scale: 1:23000



Legend

- Subject land
- Large-eared Pied Bat species polygon

133 Riverview Road, Avalon Beach

Figure 5.2. Large-eared Pied Bat species polygon.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400



Legend

- Subject land
- Eastern Cave Bat species polygon

133 Riverview Road, Avalon Beach

Figure 5.3. Eastern Cave Bat species polygon.

Coordinate system: GDA 94 / NSW Lambert
Imagery: Nearmap 4 February 2025
Scale: 1:400

6 Identifying prescribed impacts

Table 6.1 identifies prescribed impacts and whether each is relevant to the proposed development.

Table 6.1. Prescribed impacts identified.

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike.
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐ Yes / ☒ No	N/A	N/A
Human-made structures	☒ Yes / ☐ No	The subject land contains an existing residential dwelling which is proposed to be demolished as part of the proposed works.	The removal of human-made structures is considered a prescribed impact where such structures provide habitat for threatened species (e.g. roosting sites for bats or nesting sites for birds). The dwelling on the subject land was inspected for evidence of fauna use, including nests, holes, cracks, and crevices. The survey also included searches for indirect signs such as urine stains, scats, remains, and bat fly casings. No evidence of current or previous fauna use was detected, and the structure was assessed as unlikely to provide suitable habitat for threatened microbats or birds. As such, the demolition of the existing dwelling is not expected to result in the loss of habitat for threatened species and does not require further assessment as a prescribed impact.
Non-native vegetation	☒ Yes / ☐ No	Non-native vegetation occurs throughout the subject land. This includes planted ornamental species such as Jacaranda (<i>Jacaranda mimosifolia</i>), Camphor Laurel (<i>Cinnamomum camphora</i>), Magnolia spp., and Frangipani (<i>Plumeria spp.</i>). The understorey is dominated by non-native ground covers and garden escapes, including Buffalo Grass (<i>Stenotaphrum secundatum</i>),	The removal or modification of non-native vegetation is considered a prescribed impact under the BAM where it provides known habitat for threatened species. While the vegetation is not native, its potential to offer marginal foraging or sheltering opportunities, particularly for species such as the Large-eared Pied Bat, Eastern Cave Bat, and Grey-

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike.
		Fishbone Fern (<i>Nephrolepis cordifolia</i>), and Privet (<i>Ligustrum spp.</i>).	headed Flying-fox, has been considered. However, based on the field assessment, the non-native vegetation within the subject land does not support known or likely breeding habitat for threatened species, offers minimal structural or floristic connectivity to surrounding native vegetation, and is not considered to play a significant role in any key ecological processes relevant to threatened fauna within the site context.
Habitat connectivity	☒ Yes / ☐ No	Habitat connectivity on the subject land is limited to canopy-level connections with adjacent vegetation. The proposal retains 20 native canopy trees that contribute to this connectivity and remove 8 smaller sub-canopy trees, 1 dead tree, and 4 non-native trees.	Key canopy elements will be retained, and no major vegetated corridors or riparian linkages will be affected. The proposal is unlikely to significantly reduce habitat connectivity within the local landscape. The retained canopy trees are expected to continue providing movement and foraging opportunities for mobile fauna species. As such, the proposal is not considered to result in a significant prescribed impact on habitat connectivity.
Waterbodies, water quality and hydrological processes	☒ Yes / ☐ No	No natural watercourse or waterbodies occur within the subject land. However, the subject land is a waterfront property with a direct interface to the Pittwater waterway along its western boundary. The proposal includes the construction of a boatshed, decking, and jetty.	Pittwater waterway is known habitat for a number of threatened marine and coast species such as the White's Seahorse (<i>Hippocampus whitei</i>), Green Turtle (<i>Chelonia mydas</i>), Loggerhead Turtle (<i>Caretta caretta</i>), and Little Tern (<i>Sternula albifrons</i>).
Wind turbine strikes (wind farm development only)	☐ Yes / ☒ No	N/A	N/A
Vehicle strikes	☐ Yes / ☒ No	N/A	N/A

Stage 2: Impact assessment

7 Avoid and minimise impacts

The BC Act establishes a legal framework for avoiding and minimising before offsetting residual biodiversity impacts. The Act provides that measures to offset or compensate for impacts on biodiversity values may only be undertaken after steps are taken to avoid and minimise those impacts.

In practice, this means proponents must first seek to avoid direct, indirect and prescribed impacts from the proposed development on biodiversity values including native vegetation, threatened species and TECs, and habitat for threatened species and TECs.

Proponents must then minimise any remaining impacts before offsetting them.

The BAM requires that the demonstrable exploration of reasonable avoid and minimise measures on developable land is necessary to meet the avoid and minimise provisions of the BAM and BC Act.

7.1 Avoid direct and indirect impacts

7.1.1 Alternatives for the location and design of the proposal

There are no alternative locations within the site that would further reduce biodiversity impacts. The subject land comprises a small, steeply sloping 1,133 m² block. The proposed dwelling, garage, and inclinor have been confined to the eastern half of the property, allowing for the retention of Pittwater Spotted Gum Forest along the waterfront.

The proposal has been designed in accordance with the principle of avoidance and includes the retention of twenty-one Pittwater Spotted Gum Forest canopy trees across the site, as outlined in Table 7.1. This includes the retention of Tree 8, a significant habitat tree located on the shared boundary of 133 and 131 Riverview Road. Tree 8 provides habitat for Sulphur-crested Cockatoos (*Cacatua galerita*).

Table 7.1. Trees to be retained.

Tree ID	Scientific name	Common name	DBH (cm)	Retention value	Habitat value
1	<i>Eucalyptus robusta</i>	Swamp Mahogany	45	High	Foraging
2	<i>Angophora costata</i>	Sydney Red Gum	75	High	Foraging
3	<i>Angophora costata</i>	Sydney Red Gum	9	Moderate	Foraging
4	<i>Angophora costata</i>	Sydney Red Gum	24	High	Foraging
5	<i>Angophora costata</i>	Sydney Red Gum	17	Moderate	Foraging
8	<i>Angophora costata</i>	Sydney Red Gum	100	High	Inhabited by Sulphur-crested Cockatoos
9	<i>Corymbia maculata</i>	Spotted Gum	35	High	Foraging
11	<i>Corymbia maculata</i>	Spotted Gum	35	High	Foraging
13	<i>Eucalyptus paniculata</i>	Grey Ironbark	30	Moderate	Foraging
14	<i>Corymbia maculata</i>	Spotted Gum	53	High	Foraging

Tree ID	Scientific name	Common name	DBH (cm)	Retention value	Habitat value
15	<i>Corymbia maculata</i>	Spotted Gum	18	Moderate	Foraging
17	<i>Corymbia maculata</i>	Spotted Gum	62	High	Foraging
18	<i>Allocasuarina littoralis</i>	Black Sheoak	11	Moderate	Foraging
23	<i>Eucalyptus paniculata</i>	Grey Ironbark	48	High	Foraging
24	<i>Corymbia maculata</i>	Spotted Gum	23	High	Foraging
28	<i>Corymbia maculata</i>	Spotted Gum	23	High	Foraging
30	<i>Corymbia maculata</i>	Spotted Gum	28	High	Foraging
31	<i>Corymbia maculata</i>	Spotted Gum	35	High	Foraging
32	<i>Brachychiton acerifolius</i>	Illawarra Flame	27	Moderate	Foraging



Photo 7.1. Tree 8.

7.1.2 Consideration of alternative technologies to achieve the same outcome with reduced impacts

No known alternative technologies were considered.

7.1.3 Details of constraints that have influenced the selection of the proposal's location

The subject land supports several trees of high to moderate retention value. Vegetation within the site has been identified as Pittwater Spotted Gum Forest EEC. The proposed development location has been carefully selected as the most suitable option to retain and protect trees and vegetation associated with this EEC, while still accommodating the construction of a dwelling, garage, inclinator, boatshed, deck, and jetty.

The development is consistent with the surrounding residential character and built form of neighbouring properties. The proposal allows for the retention of twenty-one Pittwater Spotted Gum trees within the property, including Tree 8.

7.1.4 Constraints for matters other than biodiversity that might restrict the availability of alternative sites or footprints

The subject land is a small, 1,133 m² steeply sloping block located on the waterfront. The proposed dwelling and garage have been confined to the eastern half of the property, avoiding built form on the steepest part of the site near the foreshore.

7.1.5 Consideration of whether the areas of impacts are focused away from threatened species habitat

The proposal has been designed to retain twenty-two native trees, which provide potential foraging habitat for threatened species. This includes the retention of Tree 8, which currently supports habitat for Sulphur-crested Cockatoos (*Cacatua galerita*).

7.1.6 Whether the proposed development makes the best use of space

The proposed development makes the best use of the site while retaining its biodiversity values. The multi-level dwelling has been designed to step down the sloping terrain, presenting as a two-storey structure. The location of the dwelling and garage has been carefully selected to maximise the retention of existing trees. The construction of an inclinator, boatshed, decking, and jetty will provide foreshore access to Pittwater.

7.2 Minimise direct and indirect impacts

7.2.1 Mechanisms to assure biodiversity values in avoided areas are not degraded or lost

To ensure that biodiversity values in avoided areas are not degraded or lost, a Biodiversity Management Plan (BMP) will be prepared prior to the issue of the Construction Certificate. This plan will outline measures to protect retained vegetation and habitat features throughout the construction phase. At a minimum, the BMP will include:

- Tree protection measures (e.g., fencing, root zone protection, no-go zones);
- Construction exclusion zones and environmental signage;
- Sediment and erosion control measures;
- Management of machinery and material storage to avoid encroachment on retained vegetation;
- Pre-clearing surveys to identify and safely relocate any fauna, nests, or other ecological features of value;
- Supervision of vegetation clearing by a suitably qualified ecologist to ensure compliance with approved methods and minimise impacts;
- Monitoring and compliance reporting protocols; and
- Procedures for responding to accidental impacts.

In addition, a Vegetation Management Plan (VMP) will be prepared to guide landscaping and rehabilitation works within areas supporting retained Pittwater Spotted Gum Forest. The VMP will detail:

- Retention and protection of native canopy and understorey species;
- Weed control strategies;
- Supplementary planting using local native species of local provenance; and
- Ongoing maintenance and monitoring to support vegetation regeneration and ecological function.

Together, the BMP and VMP will ensure the long-term protection and enhancement of biodiversity values within the site, particularly in areas identified for avoidance.

7.3 Avoid and minimise prescribed impacts

7.3.1 Habitat connectivity

The subject land contains canopy trees that contribute to habitat connectivity between remnant patches of Pittwater Spotted Gum Forest on neighbouring properties. The proposal retains twenty-one trees within the site, thereby supporting habitat continuity for threatened species.

7.3.2 Waterbodies, water quality and hydrological processes

Surface water from the site discharges directly into the Pittwater waterway. The Stormwater Management Plan (Xavier Night, 16 May 2025) details the installation of a new drainage pipe network throughout the site, directing runoff to a sediment control pit located on the northern boundary near the swimming pool. From there, water will discharge through a pipe fitted with scour protection and a rock headwall to minimise erosion. During construction, sediment fencing will be installed along the northern and western boundaries, as well as around all stormwater pits, to reduce sediment mobilisation and protect the downstream aquatic ecosystem.

Kingfisher prepared an Aquatic Ecology Assessment dated 9 July 2025, which assesses the potential impacts of the proposed works on the coastal environment. The report confirms that the design and siting of the works have been guided by measures to avoid and minimise impacts wherever practicable. Key measures include:

- Siting and design:
 - The northern end of the deck is located predominantly on existing rock, with approximately 90% situated outside the intertidal zone to avoid direct impact on seagrass and sensitive marine habitats.
 - The length and alignment of the jetty have been designed to reach deeper water, ensuring that boats remain in areas with minimal sensitive benthic habitat, thus reducing sediment disturbance in shallow intertidal zones.
 - The position of the boatshed and jetty extension at the southern end was selected to minimise shading impacts on intertidal shellfish communities and to align with existing foreshore structures.
- Light penetration:
 - The jetty will be constructed using light-permeable (grated) decking materials for at least the first 15 metres, to allow light to reach the seafloor and reduce shading impacts on seagrass (*Zostera* species) and other submerged aquatic vegetation.
- Bush regeneration and habitat restoration:
 - The foreshore slope will undergo bush regeneration to remove invasive weeds (including Bitou Bush and Asparagus Fern) and be replanted with locally native species, stabilising the slope and enhancing native vegetation continuity with the coastal fringe.

- At least 15 m² of rocky reef habitat will be reinstated in deeper water using clean, locally sourced oyster shell bags to replace habitat lost beneath the deck and jetty footprint.
- Construction Environmental Management Plan (CEMP):
 - A CEMP will be prepared and implemented to manage sediment, erosion, and prevent the spread of invasive marine alga (*Caulerpa taxifolia*) during construction activities.
 - All works will be staged and managed to avoid unnecessary disturbance of nearshore habitats.
- Lighting controls:
 - All outdoor lighting will comply with Dark Sky principles to minimise light spill, glare, and disruption to native fauna. Fixtures will be shielded, downward-facing, and designed to prevent upward light escape, consistent with relevant planning guidelines.
- Pollution avoidance:
 - Disposal of sullage from boats into the waterway will be strictly prohibited. No refuelling or maintenance works (such as painting) will occur on the jetty. These activities will be confined to appropriate onshore areas or dry docks.

These measures collectively ensure that the design avoids direct impacts where feasible, minimises unavoidable impacts through sensitive design, and offsets residual impacts through habitat restoration and ongoing management, consistent with the *State Environmental Planning Policy (Resilience and Hazards) 2021* and relevant DCP controls.

8 Impact assessment

8.1 Direct impacts

8.1.1 Residual direct impacts

Table 8.1 documents the impacts likely to occur on the subject land after steps taken to avoid and minimise impacts.

Table 8.1. Summary of residual direct impacts.

Direct impact	BC Act status	EPBC Act status	SAIL entity	Project phase/timing of impact	Extent (ha)
Partial clearing of PCT 3234 – Hunter Coast Lowland Spotted Gum Moist Forest, associated with the Pittwater and Wagstaffe Spotted Gum Forest EEC	Endangered	Not listed	Yes	Construction	0.09
Loss of foraging habitat for the Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Vulnerable	Endangered	Yes	Construction	0.09
Loss of foraging habitat for the Eastern Cave Bat (<i>Vespadelus troughtoni</i>)	Vulnerable	Not listed	Yes	Construction	0.09

8.1.2 Change in vegetation integrity score

Table 8.2 documents the change in vegetation integrity for residual direct impacts on native vegetation, TECs, threatened species and their habitat that were identified on the subject land.

Table 8.2. Impacts to vegetation integrity.

Vegetation zone	PCT	Area (ha)	Before development				After development				Change in VI score
			Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	
1	3234 – Hunter Coast Lowland Spotted Gum Moist Forest	0.09	35.5	48.2	53.5	45.1	5.9	38	50	22.4	-22.7

The post-development VI score of 22.4 has been calculated based on the impacts identified in the Arboricultural Impact Assessment Report (Blue Bros Arboriculture, 16 May 2025). Tree species recorded within the plot include *Corymbia maculata*, *Eucalyptus paniculata*, *Brachychiton acerifolius*, *Allocasuarina torulosa*, *Allocasuarina littoralis* and *Glochidion ferdinandi*. The development will result in the removal of *Brachychiton acerifolius*, *Allocasuarina torulosa* and *Glochidion ferdinandi* from the site, reducing the tree species composition from 6 to 3.

The structure (% cover) of these trees recorded in the plot is 4% overall. Therefore, the development will reduce tree cover from 50% to 46%. It is noted that all canopy trees on-site will be retained, thereby maintaining canopy coverage.

All shrubs, including *Pittosporum undulatum*, *Elaeocarpus reticulatus* and *Acacia* species, will be removed as identified in the Arborist report, and consequently, the post-development scores in the BAM-C have been reduced to 0. All other understorey vegetation, including grasses, forbs, ferns and other species, is assumed to be lost due to construction impacts and future landscaping. Accordingly, the understorey composition and structure scores have been reduced to 0.

Post-development function scores for the number of large trees, litter cover, length of fallen logs, stem size class, tree regeneration and high threat weed cover have also been adjusted. The number of large trees before development is 1 and will remain at 1 with the retention of Tree 8. Litter cover and fallen logs are assumed to be lost and have been reduced to 0. The post-development stem size class remains at 5, with canopy trees retained across the site, representing a range of DBH classes (5–9 cm, 10–19 cm, 20–29 cm, 30–49 cm and 50–79 cm). Tree regeneration is currently absent and is expected to remain absent after development. High threat weed cover is currently 1% and is expected to reduce to 0% following the removal of priority weeds.

8.1.3 Impacts on threatened species and their habitat

Table 8.3 documents the impacts likely to occur on threatened species and their habitat after steps taken to avoid and minimise impacts.

Table 8.3. Impacts on threatened species and their habitat.

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha)	Biodiversity risk weighting
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Endangered	Endangered	0.09	Very High (3)
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Vulnerable	Not listed	0.09	Very High (3)



Legend

- | | |
|--|---|
| Subject land | — Tree removed |
| Development layout | — Tree retained |
| Inclinator | Impact area |
| | Pittwater Spotted Gum Forest |

133 Riverview Road, Avalon Beach

Figure 8.1. Final impacts likely to occur on the subject land.

Coordinate system: GDA 94 / NSW Lambert
 Imagery: Nearmap 4 February 2025
 Scale: 1:570

8.1.4 Impacts to trees within the subject land

Table 8.4 summarises the proposed impacts to trees within the subject land.

Table 8.4. Tree impact summary.

Tree ID	Scientific name	Common name	Proposed action
1	<i>Eucalyptus robusta</i>	Swamp Mahogany	Retain
2	<i>Angophora costata</i>	Sydney Red Gum	Retain
3	<i>Angophora costata</i>	Sydney Red Gum	Retain
4	<i>Angophora costata</i>	Sydney Red Gum	Retain
5	<i>Angophora costata</i>	Sydney Red Gum	Retain
6	<i>Glochidion ferdinandi</i>	Cheese Tree	Remove due to poor health or structural failure
7	<i>Glochidion ferdinandi</i>	Cheese Tree	Remove; Within footprint
8	<i>Angophora costata</i>	Sydney Red Gum	Retain
9	<i>Corymbia maculata</i>	Spotted Gum	Retain
10	<i>Jacaranda mimosifolia</i>	Jacaranda	Remove; Within footprint
11	<i>Corymbia maculata</i>	Spotted Gum	Retain
12	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Remove; Significantly close to footprint
13	<i>Eucalyptus paniculata</i>	Grey Ironbark	Retain
14	<i>Corymbia maculata</i>	Spotted Gum	Retain
15	<i>Corymbia maculata</i>	Spotted Gum	Retain
16	<i>Allocasuarina torulosa</i>	Forest Sheoak	Remove due to poor health or structural failure
17	<i>Corymbia maculata</i>	Spotted Gum	Retain
18	<i>Allocasuarina littoralis</i>	Black Sheoak	Retain
19	<i>Acacia sp</i>	<i>Acacia sp</i>	Remove; Significantly close to footprint
20	<i>Glochidion ferdinandi</i>	Cheese Tree	Remove; Within footprint
21	<i>Cinnamomum camphora</i>	Camphor Laurel	Remove; Within footprint
22	<i>Acacia sp</i>	<i>Acacia sp</i>	Remove; Within footprint
23	<i>Eucalyptus paniculata</i>	Grey Ironbark	Retain
24	<i>Corymbia maculata</i>	Spotted Gum	Retain

Tree ID	Scientific name	Common name	Proposed action
25	<i>Pittosporum undulatum</i>	Sweet Pittosporum	Remove; Within footprint
26	<i>Brachychiton acerifolius</i>	Illawarra Flame	Remove; Within footprint
27	<i>Jacaranda mimosifolia</i>	Jacaranda	Remove; Significantly close to footprint
28	<i>Corymbia maculata</i>	Spotted Gum	Retain
29	<i>Magnolia sp</i>	<i>Magnolia sp</i>	Remove due to poor health or structural failure
30	<i>Corymbia maculata</i>	Spotted Gum	Retain
31	<i>Corymbia maculata</i>	Spotted Gum	Retain
32	<i>Brachychiton acerifolius</i>	Illawarra Flame	Retain
33	Dead	Dead	Remove due to poor health or structural failure

8.2 Indirect impacts

Table 8.5 documents the residual indirect impacts (likely to occur on native vegetation, threatened entities and their habitat beyond the development footprint).

Table 8.5. Summary of residual indirect impacts.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/timing of impacts	Likelihood and consequences
Weed invasion (garden escapees, local priority weeds)	Pittwater Spotted Gum Forest	Vegetation and habitat beyond the development footprint	Continuous	Short-term	Construction	Construction activities have the potential to introduce and spread weeds through machinery, equipment, and clothing (e.g., boots). However, provided that the BMP and VMP are implemented, including mitigation measures for weeds, the potential impact of increased weed spread is considered to be of low risk.
Dust and noise during civil works	Pittwater Spotted Gum Forest and associated fauna	Vegetation and habitat beyond the development footprint	Daily	Temporary	Construction	The generation of dust during civil works may cause temporary stress to retained vegetation due to dust coverage and vibration. However, the likelihood of significant impact is low and considered reversible with the implementation of standard control measures such as regular watering to suppress dust, installation of physical barriers, and limiting works during dry and windy conditions.
Edge effects (light, noise)	Pittwater Spotted Gum Forest	Vegetation and habitat beyond the development footprint	Continuous	Long-term	Operation	The proposal will not result in a significant increase in noise or light levels beyond those already present in the locality. Resident fauna in the vicinity of the site are likely accustomed to the existing residential noise and lighting. Therefore, the potential for increased noise or light impacts is considered to be of low risk.
Domestic pets	Small mammals, ground-nesting birds, reptiles	Habitat beyond the development footprint	Continuous	Long-term	Operation	The presence of cats and dogs can reduce native fauna activity and increase predation risk to ground-nesting birds and reptiles. To protect local biodiversity, domestic animals must be excluded from areas of retained Pittwater Spotted Gum Forest.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/timing of impacts	Likelihood and consequences
Inclinators	Pittwater Spotted Gum Forest	Vegetation and habitat within the inclinators footprint	Continuous	Long-term	Operation	The operation of the inclinators is expected to generate some noise; however, it is comparable to other inclinators in the area and is unlikely to increase noise levels beyond those that already exist. Fauna residing in the vicinity of the proposed development are likely already accustomed to similar noise from neighbouring properties. Minor grease or oil spillage may occur during inclinators operation, particularly at the access points. These access points will be constructed on hardstand surfaces, and the potential impact on surrounding vegetation is considered low. The inclinators have been selected as the preferred access to the waterfront, as it minimises impacts on native foreshore vegetation compared to the construction of stairs.

8.3 Prescribed impacts

8.3.1 Karst, caves, crevices, cliffs, rocks or other geological features of significance

Sandstone boulders present on the subject land are unlikely to provide suitable habitat for threatened species. The field assessment found no caves, crevices, or overhangs likely to be used by species such as the Large-eared Pied Bat (*Chalinolobus dwyeri*) or the Eastern Cave Bat (*Vespadelus troughtoni*).

8.3.2 Human-made structures

No human-made structures of ecological value were identified within the subject land.

8.3.3 Non-native vegetation

No non-native vegetation of ecological value were identified within the subject land.

8.3.4 Habitat connectivity

The subject land supports canopy trees that contribute to habitat connectivity between remnant patches of Pittwater Spotted Gum Forest on neighbouring properties. The proposed development retains twenty-one trees within the site, thereby supporting ongoing habitat continuity for threatened species.

8.3.5 Waterbodies, water quality and hydrological processes

The proposed development will result in a range of direct and indirect impacts on the coastal environment within the site, primarily affecting the intertidal zone and nearshore marine habitat. These impacts are identified in the Aquatic Ecology Assessment (Kingfisher, 9 July 2025) and are summarised below:

- Permanent coverage of intertidal habitat:
 - Approximately 30 m² of intertidal rock platform will be permanently covered by the boatshed and extended deck at the southern end of the site. This area currently supports sessile and mobile marine invertebrates including oysters, whelks, limpets, barnacles, and macroalgae.
- Shading of intertidal areas:
 - An additional area of approximately 30 m² of intertidal habitat is likely to experience increased shading during the afternoon as a result of the deck and jetty structure. Shading can reduce light availability to algae and shellfish communities, potentially altering species composition.
- Direct impact to seagrass habitat:
 - Approximately 20 m² of seagrass habitat, comprising *Zostera* species and *Posidonia australis*, will be built over by the jetty structure. Although the jetty will use sun-permeable decking to reduce shading, some light reduction is unavoidable.
- Potential disturbance of the foreshore slope:
 - Works to construct the access pathway and inclinorator may disturb the steep foreshore slope, which is vegetated with native Pittwater Spotted Gum Forest and weed species. The slope is susceptible to erosion if not appropriately managed.
- Risk to marine water quality:
 - Construction activities have the potential to cause localised sediment disturbance, erosion, or accidental contamination if not carefully managed. There is also a risk of spreading the invasive marine alga *Caulerpa taxifolia*.
- Indirect effects on marine fauna:
 - The site is not known habitat for Little Penguins, Green Turtles, or seals, but these species may occasionally use nearby areas. The works will not directly impact these species but may temporarily disturb nearshore use during construction.

8.4 Mitigating residual impacts – management measures and implementation

Table 8.6 provides detail of proposed mitigation and management measures.

Table 8.6. Summary of proposed mitigation and management measures for residual impacts (direct, indirect and prescribed).

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES (when relevant)
Pre-clearing survey	Habitat features are to be marked using high visibility flagging tape or equivalent (spray paint). Habitat is to be inspected for occupying fauna. Disused nests are to be carefully dismantled or relocated prior to clearing. A concise letter report is to be prepared and provided to Council that includes: • A list of habitat features identified • A list of threatened flora and fauna identified • A list of priority weeds identified • A map detailing the locations of habitat, threatened species and weeds • Recommendations to manage any of the above features identified, and • Photographs of significant findings	No more than seven days prior to clearing commencement	Once	Ecologist with at least 3 years' experience; or a registered and licenced wildlife carer with at least 3 years' experience.	Likely to be effective.	N/A
Vegetation clearing supervision	A two-staged clearing process is to be undertaken: • Stage 1: Removal of non-habitat. Habitat trees are to be left standing for at least 24 hours, to allow nocturnal fauna an	During vegetation clearance Where timing allows, clearing should be avoid during fauna	During vegetation clearance	Ecologist with at least 3 years' experience; or a registered and licenced wildlife carer with at least 3 years' experience.	Likely to be effective.	N/A

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES (when relevant)
	opportunity to self-relocate prior to Stage 2 clearing. - Stage 2: Removal of habitat trees. Habitat is to be inspected by climbing Arborist or an Ecologist prior to removal, and fauna unable to self-relocate are to be captured and relocated. Following capture: - Healthy fauna are to be relocated to an appropriate nearby area by the attending Ecologist or licensed Wildlife Carer. - Injured or juvenile fauna are to be taken to a nearby vet or transferred into the care of a registered Wildlife Carer. - Any captured pest species are to be euthanised humanely by the attending Ecologist and must not be released.	breeding seasons (typically spring-early summer).				
Exclusion zones	The building site will be fenced to prevent the community from entering the site and to establish a buffer between the works and the bushland regeneration area. The boundary between the building site and the bushland regeneration area requires delineation using high-visibility bunting. Where a biodiversity feature within the approved clearing limits is required to be retained, red and white hazard tape is to be used.	Prior to commencement Temporary exclusion fencing is to be removed following completion of works	Ongoing	Licensed and registered surveyor, and/or ecologist with at least 3 years' experience.	Effective.	N/A

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES (when relevant)
	Exclusion zone fencing requiring star pickets must be established outside tree protection zones (in accordance with Australian Standard AS 4970-2009 Protection of trees on development sites) and following any recommendations by the project arborist.					
Tree protection zones	Tree protection exclusion fencing and signage is to be installed in accordance with the Arboricultural Impact Assessment. Tree protection zone signage is recommended to inform contractors working within the construction footprint and is recommended to be at 5 metre intervals outwards and visible and clearly obvious to contractors.	Prior to commencement	Ongoing	Arborist	Effective.	N/A
Erosion and sedimentation	Appropriate erosion and sediment control must always be erected and maintained during construction to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with relevant industry guidelines such as 'the Blue Book' (Landcom 2004).	Prior to construction	Ongoing	Proponent Construction Contractor	Effective.	N/A
Weeds and pathogens	Priority weeds would be managed in accordance with the <i>Biosecurity Act 2015</i>. Weeds of national significance would be managed in accordance with the Weeds of National Significance: weed management guides. Any herbicides would be applied such that impacts on surrounding agricultural properties and native vegetation are avoided.	During construction	Ongoing	Proponent Bush Regeneration Contractor	Effective.	N/A

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES (when relevant)
Salvage and relocation of woody debris	Where possible, woody debris (fallen trees and logs) within the subject land are to be retained. Logs from the felling of mature canopy trees should be relocated within the site, as directed by the Project Ecologist.	During vegetation clearance	Once	Proponent Project Ecologist Bush Regeneration Contractor	Likely to be effective.	N/A
Storage and stockpiling (soil and materials)	Allocate all storage, stockpile and laydown sites away from any native vegetation that is planned to be retained. Avoiding importing any soil from outside the site as this can introduce weeds and pathogens to the site.	During construction	Ongoing	Construction Contractor	Effective.	N/A

9 Serious and irreversible impacts

9.1 Assessment for serious and irreversible impacts on biodiversity values

Table 9.1 identifies the entities at risk of serious and irreversible impacts (SAIL) relevant to the proposed development.

The information in the following sections is provided to assist the consent authority to evaluate the nature of an impact on a potential entity at risk of an SAIL (in accordance with BAM Sections 9.1.1 and 9.1.2).

Table 9.1. Entities at risk of an SAIL.

Common name	Scientific name	Reason for inclusion in assessment
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Included in current list of entities at risk of an SAIL and is likely to be impacted by the proposal
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Included in current list of entities at risk of an SAIL and is likely to be impacted by the proposal
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Included in current list of entities at risk of an SAIL and is likely to be impacted by the proposal

9.2 TEC at risk of an SAIL (Pittwater and Wagstaffe Spotted Gum Forest)

Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion is assessed in this section as it is an SAIL ecological community. In accordance with BAM Section 9.1.1 the following information is provided to assist the consent authority in determining whether the proposal represents a serious and irreversible impact on this TEC.

9.2.1 Actions and measures taken to avoid the direct and indirect impacts on the TEC at risk of SAIL

Refer to Section 7 of this BDAR.

9.2.2 Current status (excluding impacts of the proposal)

Table 9.2. Current status – Pittwater and Wagstaffe Spotted Gum Forest.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
Current total geographic extent (ha) of the TEC in NSW	The NSW Scientific Committee estimate the total extant area of the community is 227 ha. A search of the NSW BioNet Vegetation Classification database for PCTs associated with the Pittwater and Wagstaffe Spotted Gum Forest returned PCT 3234, Hunter Coast Lowland Spotted Gum Moist Forest and PCT	NSW Scientific Committee – final determination (2013) NSW BioNet Vegetation Classification database (accessed 19 April 2024)	The NSW Scientific Committee's estimate of the total extant area is considerably lower than that identified in the BioNet Vegetation Classification database; however, given DPE's ecological systematic revision of PCTs in 2022, PCT 3234 and 3437 are not limited to the Pittwater region. Lineage PCT 1214, Pittwater Spotted Gum Forest

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
	3437, Hunter Coast Lowland Spotted Gum Dry Forest as forming 'part' of the ecological community. The current extent of PCT 3234 listed in the database is 7925 ha. The current extent of PCT 3437 listed in the database is 994 ha.		identifies the current extent of the community is 275 ha.
Estimated reduction in geographic extent of the TEC since 1970	The NSW Scientific Committee estimate the reduction in geographic distribution of the community since European settlement is 75%. The pre-European extent of PCT 3234 listed in the database is 10,952 ha, and PCT percent cleared is 27.64%. The pre-European extent of PCT 3437 listed in the database is 2,473 ha, and PCT percent cleared is 59.81%.	NSW Scientific Committee – final determination (2013) NSW BioNet Vegetation Classification database (accessed 19 April 2024)	Information on the estimated reduction in geographic extent of the TEC since 1970 is unavailable. The database identifies the pre-European extent of PCT 1214 is 954 ha, and PCT percent cleared is 71%.
Extent of reduction in ecological function, describing the degree of environmental degradation or disruption to biotic processes (Principle 2) indicated by factors listed in BAM Subsection 9.1.1(2.b.) This ecological community is threatened by clearing for urban development, urban runoff, dumping of rubbish and garden refuse, weed invasion, inappropriate fire regimes, fragmentation, and demographic and environmental stochasticity due to the small size of most remaining remnants. Collectively, these threats have led to changes in community structure and species composition, habitat degradation and fragmentation, and invasion and establishment of exotic species, and are indicative of a large reduction in ecological function of the community.			
Evidence of restricted geographic distribution (Principle 3) based on the TEC's geographic range in NSW			
Extent of occurrence (ha)	approx. 227ha	NSW Scientific Committee – final determination (2013)	
Area of occupancy (ha)	approx. 88km ²	NSW Scientific Committee – final determination (2013)	

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
Number of threat-defined locations	Pittwater and Wagstaffe Spotted Gum Forest is restricted to the Sydney Basin Bioregion and is currently known to occur within the local government areas of Pittwater and Gosford but may occur elsewhere within the bioregion.	NSW Scientific Committee – final determination (2013)	No threat defined locations are listed in the TBDC.

9.2.3 Impact assessment

Table 9.3. Impact assessment – Pittwater and Wagstaffe Spotted Gum Forest.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
Impact on the geographic extent of the TEC (Principles 1 and 3)			
Area of TEC to be impacted by the proposal (ha)	0.01	N/A	N/A
Area of TEC to be impacted by the proposal as a % of the current geographic extent in NSW (%)	0.04%	N/A	N/A
Direct/indirect impacts likely as a result of the proposal to contribute to loss of flora/fauna species characteristic of the TEC (BAM Subsection 9.1.1(4.a.ii.))	Refer to Section 8 of this BDAR.	N/A	N/A
Impacts likely to contribute to further environmental degradation or disruption of biotic processes (Principle 2)			
Remaining extent of isolated areas of TEC (ha)	The proposal does not isolate areas of the TEC.	N/A	N/A
Average distance between remaining remnants – remnant is retained (m)	TEC connectivity to be maintained with the retention canopy trees.	N/A	N/A

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
Average distance between remaining remnants – remnant is removed (m)	N/A	N/A	N/A
Estimated maximum dispersal distance of species associated with the TEC (km)	N/A	N/A	N/A
Area to perimeter ratio of remaining remnants (ratio)	N/A	N/A	N/A
Vegetation integrity analysis			
Vegetation Zone 1 (Composition score)	35.5	N/A	N/A
Vegetation Zone 1 (Structure score)	48.2	N/A	N/A
Vegetation Zone 1 (Function score)	53.5	N/A	N/A

9.3 Species at risk of SAI (Large-eared Pied Bat and Eastern Cave Bat)

Chalinolobus dwyeri (Large-eared Pied Bat) and *Vespadelus troughtoni* (Eastern Cave Bat) are assessed in this section as they are SAI threatened species. In accordance with BAM Section 9.1.2 the following information is provided to assist the consent authority in determining whether or not the proposal represents a serious and irreversible impact on this species.

The species are species credit species because they cannot be reliably predicted to occur on a site based on vegetation and other landscape features (either foraging or breeding).

Any impacts on breeding habitat used by the species could be considered potentially serious and irreversible. Potential breeding habitat associated with the species includes rocky areas containing caves, overhangs, escarpments, outcrops, or crevices.

9.3.1 Measures taken to avoid the direct and indirect impacts on the species at risk of an SAI

Rocky areas containing caves, overhangs, escarpments, outcrops, or crevices are not present on the subject land and thus, the proposal would not impact on breeding habitat for this species.

This species forages for small, flying insects below the forest canopy. Hence, timbered areas within the subject land that are subject to clearing have been conservatively entered into the BAM-C and an offset obligation incurred.

9.3.2 Current status – Large-eared Pied Bat

Table 9.4. Current status – Large-eared Pied Bat.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
Species that is unlikely to respond to management and is therefore irreplaceable (Principle 4)			
Life history traits and/or ecology which is known, but the ability to control key threats at the site scale is negligible	The species is known to be reliant of caves for breeding.	Conservation Advice for <i>Chalinolobus dwyeri</i> (Large-eared Pied Bat) Department of Agriculture, Water and the Environment (2021)	The lack of detailed information regarding the distribution, abundance and ecological requirements of the species makes an assessment of key threats difficult.
Known reproductive characteristics that severely limit their ability to increase the existing population on, or occupy new habitat	The species is known to be reliant of caves for breeding.	Conservation Advice for <i>Chalinolobus dwyeri</i> (Large-eared Pied Bat) Department of Agriculture, Water and the Environment (2021)	
Habitat critical to the survival of the species	The species is dependent on the presence of diurnal roosts for shelter. Roosts are utilised during the day and also at night when not feeding, as well as for the raising of young. This bat has been	National recovery plan for the Large-eared Pied Bat <i>Chalinolobus dwyeri</i> Department of Environment and Resource Management (2011).	The value of mine shafts and disused fairy martin nests as roost sites has not been evaluated to date. The number of known breeding sites is limited.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
	known to roost in disused mine shafts, caves, overhangs and abandoned fairy martin <i>Hirundo ariel</i> nests (Schulz 1998).		
Number of threat-defined locations	The main known cause of decline in the species is the destruction of, and interference with maternity and other roosts. Information presented in the recovery plan and in Schulz et al. (1999) identifies other probable threats as: mining of roosts; mine induced subsidence of cliff lines; disturbance from human recreational activities; habitat disturbance by introduced animals, including livestock; predation by introduced pests; vegetation clearing in the proximity of roosts; and fire in the proximity of roosts.	Department of Environment and Resource Management (2011).	No threat-defined locations are listed in the TBDC. The lack of detailed information regarding the distribution, abundance and ecological requirements of the species makes an assessment of threats difficult.
Whether the species' population is likely to undergo extreme fluctuations	It has been suggested that the species is unlikely to undergo extreme natural fluctuations in population numbers, extent of occurrence or area of occupancy (Hoye 2006 pers. comm.), although the justification for this is unknown.	DCCEE SPRAT	There is insufficient data to estimate abundance or population trends of the Large-eared Pied Bat. Also, no site monitoring of known roosts has occurred. Some data were collected in the early 1960s, but this site was subsequently flooded by Copeton Dam (Hoye & Dwyer 1995).

9.3.3 Current status – Eastern Cave Bat

Table 9.5. Current status – Eastern Cave Bat.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
Species that is unlikely to respond to management and is therefore irreplaceable (Principle 4)			
Life history traits and/or ecology which is known, but the ability to control key threats at the site scale is negligible	The species is known to be reliant of caves for breeding.	NSW OEH Eastern cave bat – profile (Last updated 01 Dec 2017)	Very little is known about the ecology, behaviour and habitat requirements.
Known reproductive characteristics that severely limit their ability to increase the existing population on, or occupy new habitat	The species is known to be reliant of caves for breeding.	NSW OEH Eastern cave bat – profile (Last updated 01 Dec 2017)	Very little is known about the ecology, behaviour and habitat requirements.
Habitat critical to the survival of the species	Caves	NSW OEH Eastern cave bat – profile (Last updated 01 Dec 2017)	
Number of threat-defined locations	The main known threats to the species include: - Clearing and isolation of dry eucalypt forest and woodland, particularly about cliffs and other areas containing suitable roosting and maternity sites, mainly as a result of agricultural and residential development. - Loss of roosting habitat including rocky areas, caves, overhangs crevices, cliffs and escarpments, or old mines or tunnels, old buildings and sheds. - Loss of suitable feeding habitat near roosting and maternity sites as a	NSW OEH Eastern cave bat – profile (Last updated 01 Dec 2017)	No threat-defined locations are listed in the TBDC.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
	result of modifications from timber harvesting and inappropriate fire regimes usually associated with grazing. • Pesticides and herbicides may reduce the availability of invertebrates, or result in the accumulation of toxic residues in individuals' fat stores. • Damage to roosting and maternity sites from mining operations, and recreational activities such as caving. • There is a strong likelihood that unrecorded populations could be unintentionally affected by land management actions. • Probable predation by cats and foxes.		
Whether the species' population is likely to undergo extreme fluctuations	Unknown		Very little is known about the ecology, behaviour and habitat requirements.

9.3.4 Impact assessment – Large-eared Pied Bat and Eastern Cave Bat.

Table 9.6. Impact assessment – Large-eared Pied Bat and Eastern Cave Bat.

Criteria	Data/ information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information (e.g. TBDC indicates data is unknown or deficient)
Number of individuals (mature and immature) present in the subpopulation on the subject land	The subject land does not contain a subpopulation of either species. The vegetation within the subject land forms part of the species' foraging habitat.	N/A	N/A
Number of individuals (mature and immature) to be impacted by the proposal	No individuals would be directly impacted.	N/A	N/A
Individuals (mature and immature) to be impacted by the proposal as a percentage of total NSW population (%)	No individuals would be directly impacted.	N/A	N/A
Area of habitat to be impacted (ha) (for species measured by area only)	0.09 hectares of foraging habitat will be impacted.	N/A	N/A
Individuals impacted	No individuals will be directly impacted, some habitat will be impacted.	N/A	N/A

10 Impact summary

10.1 Determine an offset requirement for impacts

10.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

Table 10.1 identifies the impacts that require an offset (as per BAM Subsection 9.2.1(1.)). Refer to Figure 10.1 Thresholds for assessment and offsetting impacts.

Table 10.1. Impacts that require an offset – ecosystem credits.

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
1	Hunter Coast Lowland Spotted Gum Moist Forest	Pittwater and Wagstaffe Spotted Gum Forest	0.09	45.1	22.4	-22.7	2	1

10.1.2 Impacts on threatened species and their habitat (species credits)

Table 10.2 identifies the impact on threatened species and their habitat (species credits) that require offset.

Table 10.2. Impacts that require an offset – species credits.

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha) or individuals	Biodiversity risk weighting	Number of species credits required
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Endangered	0.09	3	2
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Vulnerable	Not Listed	0.09	3	2

10.1.3 Indirect and prescribed impacts

No additional offsets are proposed to account for residual indirect and prescribed impacts.

Other scenarios

No alternative offsetting scenarios are currently proposed for this proposal.



Legend

- | | |
|--|---|
| Subject land | — Tree removed |
| Development layout | — Tree retained |
| Inclinator | Areas requiring an offset |

133 Riverview Road, Avalon Beach

Figure 10.1. Thresholds for assessing and offsetting impacts.

Coordinate system: GDA 94 / NSW Lambert
 Imagery: Nearmap 4 February 2025
 Scale: 1:570

11 Appendices

11.1 Appendix I – BDAR requirements compliance

Table 11.1. Assessment of compliance with BDAR minimum information requirements.

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	-
		☐ brief description of proposed development	<1.1.1>
		☐ identification of subject land boundary, including: ☐ operational footprint ☐ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	<1.1.3>
		☐ general description of the subject land	<1.1.2>
		☐ Sources of information used in the assessment, including reports and spatial data	<1.1.4 & 1.4>
		☐ Identification of assessment method applied (i.e. linear or site-based)	<1.2.3>
		Maps and tables	
		☐ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure (if BDAR)	<Figure 1.1>
Landscape		Information	
		Identification of site context components and landscape features at the proposed site, including:	<Table 3.1>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
	Section 3.1 and 3.2, Appendix E	☐ general description of subject land topographic and hydrological setting, geology and soils ☐ percent native vegetation cover in the assessment area (as described in BAM Subsection 3.2 (4 .)) ☐ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3 (2 .)) Other relevant landscape features which may include: ☐ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3 (3 –4.) and Appendix E) ☐ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3 (4 .)) ☐ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3 (5 –6 .)) ☐ areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3 (7.) and 3.1.3 (10 .)) ☐ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3 (8 –9 .))	
		Maps and tables	
		☐ Site Map ☐ boundary of subject land ☐ cadastre of subject land ☐ landscape features identified in BAM Subsection 3.1.3 ☐ areas of outstanding biodiversity value within the subject land	<Figure 1.1>
		☐ Location Map ☐ digital aerial photography at 1:1,000 scale or finer ☐ boundary of subject land ☐ 1500 m buffer area <i>or</i> 500 m buffer for linear development	<Figure 3.1 & Figure 3.2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ landscape features identified in BAM Subsection 3.1.3 ☐ additional detail (e.g. local government area boundaries) relevant at this scale ☐ areas of outstanding biodiversity value within the assessment area	
		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location map include: ☐ IBRA bioregions and subregions ☐ rivers, streams and estuaries ☐ wetlands and important wetlands ☐ connectivity of different areas of habitat ☐ areas of geological significance and soil hazard features	<Figure 3.1 & Figure 3.2>
		Data	
		☐ All report maps as separate jpeg files	Uploaded to BOAMS
		Individual digital shape files of: ☐ subject land boundary ☐ assessment area (i.e. buffer area) boundary ☐ cadastral boundary of subject land ☐ areas of native vegetation cover ☐ areas of habitat connectivity	Uploaded to BOAMS
Native vegetation, TECs and	Chapter 4	Information	
		☐ Patch size (in accordance with BAM Subsection 4.3.2)	<Table 4.7>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
vegetation integrity		☐ Identification of the dominant PCT on the subject land and extent (ha) with justification of method used (existing information or plot-based survey data)	<4.3>
		☐ Identification of any TEC associated with the PCT (BAM Subsection 4.2.2)	<4.4>
		☐ Estimate of percent cleared value of dominant PCT (BAM Subsection 4.2.1 (5 .))	<Table 4.3>
		☐ Identification of any TEC on site that is not associated with the dominant PCT (Note: This TEC is required to be assessed and offset.)	N/A
		☐ Equivalence with mapping units of previous vegetation maps reviewed as part of the assessment (i.e. equivalent mapping units)	<2.2.1>
		☐ Vegetation integrity of the PCT(s) on the subject land as individual vegetation zones	<Table 4.8>
		☐ Justification for how this was determined (i.e. qualitatively by observing values for the condition attributes set out in Table 2 of the BAM or quantitatively by collecting field data for the condition attributes at a plot in accordance with BAM Subsection 4.3.4)	<2.2.4>
		☐ Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsections 4.3.3 (5 .))	<4.6.3>
		Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A): ☐ identify the PCT or vegetation class for which local benchmark data will be applied ☐ identify published sources of local benchmark data (if benchmarks obtained from published sources) ☐ describe methods of local benchmark data collection (if reference plots used to determine local benchmark data) ☐ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	N/A
Maps and tables			

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Map of native vegetation extent for the subject land (as described in BAM Section 3.1)	<Figure 4.1>
		☐ Map of PCT/vegetation zones within the subject land (as described in BAM Section 4.2 (1.))	<Figure 4.4>
		☐ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	<Figure 4.2>
		☐ Map of TEC distribution on the subject land	<Figure 4.3>
		☐ Patch size of native vegetation (as described in BAM Subsection 4.3.2)	<Table 4.7>
		Table of current vegetation integrity scores for vegetation zone within the site including: ☐ composition condition score ☐ structure condition score ☐ function condition score	<Table 4.8>
		☐ Report from BAM-C (Small area module) including vegetation integrity scores (BAM Section 4.4)	<Appendix V – Credit reports
		Data	
		☐ All report maps as separate jpeg files ☐ Plot field data (MS Excel format) ☐ Digital shape files for all maps and spatial data	Uploaded to BOAMS
		☐ Field data sheets (if relevant) for determining vegetation integrity (BAM Subsection 4.3.4)	<Appendix III – Vegetation survey data
		Information	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Habitat suitability for threatened species	Chapter 5 and Section 9.1	☐ Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land	<2.3 & 2.4>
		☐ Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits	<Table 5.1, Table 5.2 & Table 5.3>
		☐ List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2)	<Table 5.1>
		☐ Identification of candidate species credit species that are at risk of an SAI and therefore, must be further assessed (BAM Section 9.1) Note: Candidate species credit species that are not at risk of an SAI and not incidentally recorded on the subject land do not require further assessment.	<Table 5.2 & Table 5.3>
		For candidate species credit species that are at risk of an SAI, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including:	-
		☐ justification for determining that a candidate species credit species at risk of an SAI is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM)	<Table 5.2 & Table 5.3>
		☐ determination of the presence of remaining candidate species credit species at risk of an SAI (by assuming presence, conducting a threatened species survey or an expert report). Note: If the subject land is mapped on an important habitat map for a species, or for a component of its habitat, the subject land is considered to have suitable habitat for the species to be present.	<Table 5.4 & Table 5.5>
		☐ species polygons identifying the location and area of suitable habitat for each candidate threatened species at risk of an SAI that is recorded on the subject land and is measured by area, OR	<Table 5.7>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ species polygons identifying the area of suitable habitat and targeted surveys identifying the count and location of individuals on the subject land for each candidate threatened flora species at risk of an SAI that is recorded on the subject land and is measured by count ☐ species polygons for each threatened species identified on the subject land that is not at risk of an SAI (i.e. incidentally observed during site visit)	N/A
		☐ Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAI or incidentally observed during the site visit (Step 6 of BAM Section 5.2)	<Table 5.7>
		☐ For flora species credit species at risk of an SAI or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5 (4.))	N/A
		Maps and tables	
		☐ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1 , and: ☐ identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3 ☐ identifying the sensitivity to gain class of each species (BAM Section 5.4)	<Table 5.1>
		☐ Table detailing species credit species within the subject land at risk of an SAI (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2 –5.4)	<Table 5.7>
		☐ Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAI or incidentally observed during the site visit (as described in BAM Subsection 5.2.5 (1 –7 .))	<Figure 5.1, Figure 5.2 & Figure 5.3>
		Data	
		☐ Digital shape files of species polygons ☐ Species polygon map in jpeg format	Uploaded to BOAMS

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Expert reports and any supporting data used to support conclusions of the expert report ☐ Field data sheets (if relevant) for threatened species surveys	
Prescribed impacts	Chapter 6	Information	
		☐ Any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	<Table 6.1>
		Maps and tables	
		☐ If relevant, maps showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	N/A
		Data	
		☐ If relevant, digital shape files of prescribed impact feature locations ☐ Prescribed impact features map in jpeg format	N/A
Avoid and minimise impacts	Chapter 7	Information	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative: ☐ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology ☐ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location ☐ alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site ☐ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Subsections 7.1.2 and 7.2.2)	<7>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1 (3 .))	
		Maps and tables	
		☐ Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	<Table 8.6>
		☐ Map of final proposal footprint, including construction and operation	<Figure 1.1>
		☐ Maps demonstrating indirect impact zones where applicable	<Figure 8.1>
		Data	
		Digital shape files of: ☐ final proposal footprint ☐ direct and indirect impact zones ☐ Maps in jpeg format	Uploaded to BOAMS
Assessment of impacts	Chapter 8, Section 8.1 and 8.2	Information	
		Determine the impacts on native vegetation and threatened species habitat, including:	-
		☐ description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Sections 8.1)	<Table 8.1. Summary of residual direct impacts. Table 8.1>
		☐ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2	<Table 8.5>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	<8.3>
		Maps and tables	
		☐ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	<Table 8.2. Impacts to vegetation integrity.
Mitigation and management of impacts	Chapter 8, Section 8.4 and 8.5	Information	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Subsections 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.): ☐ techniques, timing, frequency and responsibility ☐ identify measures for which there is risk of failure ☐ evaluate the risk and consequence of any residual impacts ☐ document any adaptive management strategy proposed Identification of measures for mitigating impacts related to: ☐ displacement of resident fauna (as described in BAM Subsection 8.4.1) ☐ indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1 (3 .)) ☐ mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	<Table 8.6>
		☐ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	N/A
		Maps and tables	
		☐ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	<Table 8.6>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Thresholds for assessing and offsetting impacts of the proposal	Chapter 9	Information	
		☐ Information from the TBDC and/or other sources to report on the current status of threatened species, threatened populations at risk of an SAI and TEC/s for the proposal, and	<Table 9.2, Table 9.4 & Table 9.5>
		☐ Report on impacts of the proposal on TEC/s in accordance with BAM Subsection 9.2.1	<Table 9.3>
		☐ Report on impacts of the proposal on threatened species and/or threatened populations at risk of an SAI in accordance with BAM Section 9.1	<Table 9.6>
		☐ Identification of impacts requiring offset in accordance with BAM Section 9.2	<10>
		☐ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1 (3 .)	
		☐ Identification of areas not requiring assessment in accordance with BAM Section 9.3	
		Maps and tables	
		☐ Map showing the extent of TECs at risk of an SAI within the subject land	<Figure 4.3>
		☐ Map showing the location of threatened species at risk of an SAI within the subject land	<Figure 5.2 & Figure 5.3>
		Map showing location of:	-
		☐ impacts requiring offset ☐ impacts not requiring offset ☐ areas not requiring assessment	<Figure 10.1>
		Data	
		Digital shape files of:	Uploaded to BOAMS

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ extent of TECs at risk of an SAI within the subject land ☐ threatened species at risk of an SAI within the subject land ☐ boundary of impacts requiring offset ☐ boundary of impacts not requiring offset ☐ boundary of areas not requiring assessment ☐ Maps in jpeg format	
Applying the no net less standard	Chapter 10	Information	
		☐ Description of the impact on PCTs/TECs	<Table 8.1>
		☐ Description of the impact on threatened species at risk of an SAI or incidentally observed via site visit	<Table 8.1>
		☐ Number of ecosystem credits required for impacts on biodiversity values according to BAM Subsection 9	<Table 10.1>
		☐ Number of species credits required for impacts on biodiversity values according to BAM Subsection 10.1.3, including any species credit species that has been incidentally observed on the subject land Note: Species credits for any species at risk of an SAI are calculated in the event that the decision-maker forms the opinion that the proposed impact is unlikely to be serious and irreversible and therefore can be offset.	<Table 10.2>
		☐ Identification of credit class for ecosystem credits and species credits according to BAM Section 10.2 (this can be generated from BAM-C)	<Appendix V – Credit reports>
		Maps and tables	
		☐ Table showing biodiversity risk weightings	<Table 10.1 & Table 10.2>
		☐ Table of BC Act listing status for PCTs and threatened species requiring offset	<Table 10.1 & Table 10.2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Table of PCTs requiring offset and number of ecosystem credits required (Subsection 10.2.1)	<Table 10.1>
		☐ Table of species at risk of an SAI or incidentally observed on site assessed for species credits and the number of credits required	<Table 10.2>
		☐ BAM-C credit report	<Appendix V – Credit reports

11.2 Appendix II – Matters of national environmental significance

11.2.1 Relevant Matters

A search for matters of national environmental significance within a 5-kilometre radius of the subject land was conducted using the Protected Matters Search Tool¹. Table 11.1 summarises the results of the search, listing the matters of national environmental significance that may occur in, or may relate to, the subject land.

Table 11.2. Matters of national environmental significance.

World Heritage Properties	None
National Heritage Places	1
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	1
Listed Threatened Ecological Communities	8
Listed Threatened Species	113
Listed Migratory Species	60

Matters of national environmental significance relevant to the proposed development include threatened and migratory species.

The Large-eared Pied Bat (*Chalinolobus dwyeri*) is assumed to be present on the subject land and is listed as endangered under the EPBC Act. While the site does not contain rocky features such as caves, overhangs, escarpments, outcrops, or crevices, which are essential for breeding, the proposal may impact foraging habitat. The bat forages for small flying insects below the forest canopy, and as a result, the timbered areas to be cleared have been included in the BAM-C assessment, triggering an offset obligation.

Other threatened species that may opportunistically forage on the subject land include the Brown Treecreeper, Gang-gang Cockatoo, Regent Honeyeater, South-eastern Glossy Black-Cockatoo, Swift Parrot, and the Grey-headed Flying-fox.

Terrestrial migratory species such as the White-throated Needletail, Yellow Wagtail, and Oriental Cuckoo may also use the site's vegetation for foraging.

11.2.2 Significant Impact Assessment

Threatened Species

The threatened species identified in Section 11.2.1 have been assessed in accordance with the significant impact criteria for vulnerable, endangered, and critically endangered species outlined in the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (DoE 2013).

Considering all stages and components of the proposal, as well as associated activities and infrastructure, there is potential for impacts, including indirect impacts, on matters of national environmental significance. These impacts mainly involve the loss of potential foraging habitat for mobile threatened fauna species, including birds, bats, and mammals. However, it is highly unlikely that any of these species will be adversely affected by the proposal because:

¹ [Protected Matters Search Tool - DCCEEW](#)

- Suitable breeding habitat for most species is absent from the subject land. For species that may use the habitats present, local populations are unlikely to rely solely on the subject land for survival. Any local populations will not be rendered extinct by the proposed development, given the species' large ranges and the small area, nature, and condition of the habitats on the site.
- The subject land is not considered to contain habitat critical to the survival of any species.
- The subject land is unlikely to support an 'important population' (as defined by DoE 2013) of any threatened species.
- Proposed mitigation measures will minimise or reduce impacts on threatened species.

According to the criteria for vulnerable, endangered, and critically endangered species, the proposal is unlikely to:

- Lead to a long-term decrease in the size of an important population of a species
- Reduce the area of occupancy of an important population
- Fragment an existing important population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of an important population
- Modify, destroy, remove, isolate, or decrease the availability or quality of habitat to an extent that could cause a species to decline
- Enable the establishment of invasive species harmful to a vulnerable species within its habitat
- Introduce diseases that may cause a species to decline
- Interfere substantially with the recovery of any of these species

Migratory Species

The subject land contains potential foraging habitat for terrestrial migratory species. The forested areas may be used temporarily by highly mobile migratory species during foraging, dispersal, or migration. However, the subject land represents only a small proportion of these species' large ranges and does not contain breeding habitat.

According to the criteria for migratory species in the *Matters of National Environmental Significance Significant Impact Guidelines 1.1*, the subject land does not contain 'important habitat' for any migratory species. Furthermore, the proposal is highly unlikely to disrupt the lifecycle (breeding, feeding, migration, or resting behaviour) of an ecologically significant proportion of any migratory species' population.

Therefore, the proposal is not likely to significantly impact any listed migratory species under the EPBC Act.

Conclusion

Based on this assessment, it is unlikely that the proposed development will have a significant impact on any matters of national environmental significance listed under the EPBC Act. Consequently, referral of the development application to the Commonwealth Department of Climate Change, Energy, the Environment and Water is not required.

11.3 Appendix III – Vegetation survey data

Sheet #	1 of 2	Date	21/05/2024	Survey name	133 Riverview Rd, Avalon Beach			Plot identifier	1
Recorders	Brooke Thompson			IBRA region	Pittwater			Veg zone ID	1
Datum	GDA94	Coordinate system	Geographic	MGA zone	56	Easting	343877	Northing	6278522
Location description		Front and rear garden							
Plot dimensions		For composition & structure (400m²): 20 m x 20 m For function (1000m²): 20 m x 50 m			Orientation of midline from 0 m point		246		

Datum: AGD66, WGS84, GDA94, GDA2020 or other (specify).

MGA Zone (for projected coordinate system only): 56 (Coastal NSW), 55 (Central NSW) or 54 (Western NSW).

X/Y coordinate: Long/Lat (for projected coordinate system), Easting/Northing (for geographic coordinate system).

XY Coordinate: Long/Lat (for projected coordinate system), Easting/Northing (for geographic coordinate system).

Vegetation integrity

Composition and structure sum values may be completed after entering data into available tools. It is not required while in the field.

Composition (400 m ² plot)			Structure (400 m ² plot)			Function (1000 m ² plot)		
		Sum values			Sum values (%) (may sum to >100%)	³ Tree stem size class (DBH)	If data are to be used as more appropriate local data i.e., to generate local benchmarks, stems must be counted	
Total count of native plant species (richness) in each growth form group (not individual plants within each growth form)	Trees (TG)	6	² foliage cover of native plant species by growth form group	Trees (TG)	50	80 + cm	1	
	Shrubs (SG)	3		Shrubs (SG)	5	50 – 79 cm	1	
	Grasses etc. (GG)	4		Grasses etc. (GG)	3	30 – 49 cm	✓	
	Forbs (FG)	3		Forbs (FG)	2.5	20 – 29 cm	✓	
	Ferns (EG)	2		Ferns (EG)	1.5	10 – 19 cm	✓	
	Other (OG)	3		Other (OG)	5.6	5 – 9 cm	✓	
					⁴ Tree regeneration <5 cm	0		
			Total high threat weed cover	1%	⁵ Length of fallen logs	13 m		
						⁶ Hollow bearing trees	1	
Vegetation integrity – function cont. (five 1 m² plots)				⁷ Litter cover (%)				
Subplot score (% in each)				20	30	5	5	20
Average of the 5 subplots				16				

These attributes require consideration of site observations and may be completed after field work:

Vegetation class	Northern Hinterland Wet Sclerophyll Forests	⁸ Large tree benchmark size	80 DBH	Confidence	High
Plant community type (PCT)	Hunter Coast Lowland Spotted Gum Moist Forest	EEC	✓	Confidence	High

400 m ² floristics plot:		Survey name	Plot identifier	Recorders	
Date	21 / 05 / 2024	133 Riverview Rd, Avalon Beach	1	Brooke Thompson	
GF code	Species name Full species name, or a unique means of identifying separate taxa within a survey is mandatory. Data from here will be used to assign growth form richness and cover.		N, HTW or non-HTW		² Foliage cover
TG	1	<i>Corymbia maculata</i>	N		40
TG	2	<i>Eucalyptus paniculata</i>	N		5
TG	3	<i>Brachychiton acerifolius</i>	N		2
TG	4	<i>Allocasuarina torulosa</i>	N		1
TG	5	<i>Allocasuarina littoralis</i>	N		1
TG	6	<i>Glochidion ferdinandi</i>	N		1
SG	7	<i>Pittosporum undulatum</i>	N		2
SG	8	<i>Elaeocarpus reticulatus</i>	N		2
SG	9	<i>Acacia sp</i>	N		1
GG	10	<i>Oplismenus aemulus</i>	N		1
GG	11	<i>Commelina cyanea</i>	N		0.5
GG	12	<i>Microlaena stipoides</i>	N		0.5
GG	13	<i>Lomandra longifolia</i>	N		1
FG	14	<i>Oxalis perennans</i>	N		0.5
FG	15	<i>Dichondra repens</i>	N		1
FG	16	<i>Lobelia purpurascens</i>	N		1
EG	17	<i>Asplenium antiquum</i>	N		0.5
EG	18	<i>Blechnum cartilegeum</i>	N		1
OG	19	<i>Glycine tabacina</i>	N		0.5
OG	20	<i>Macrozamia communis</i>	N		5
OG	21	<i>Geitonoplesium cymosum</i>	N		0.1
	22	<i>Ligustrum lucidum</i>	HTW		1
	23	<i>Cinnamomum camphora</i>	E		1
	24	<i>Nephrolepis cordifolia</i>	E		1
	25	<i>Plumeria sp</i>	E		1
	26	<i>Aechmea sp</i>	E		2
	27	<i>Jacaranda mimosifolia</i>	E		4
	28	<i>Magnolia sp</i>	E		1

GF Code: see growth form definitions in BAM 2020 Appendix F. **N:** native, **HTW:** high threat weed.

² **Foliage cover:** 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

11.4 Appendix IV – Pittwater Local Environmental Plan 2014 and Pittwater 21 Development Control Plan

11.4.1 Land zoning

The site is zoned C4 – Environmental Living under the Pittwater Local Environmental Plan 2014.

Table 11.3. Compliance with land zoning objectives.

Objectives	Compliance
To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.	The site contains Pittwater Spotted Gum Forest. The proposed residential development is consistent with the character of adjoining properties while ensuring the retention of the site's ecological and aesthetic values. The proposal preserves twenty-one Pittwater Spotted Gum Forest trees and the vegetated foreshore, maintaining both its ecological significance and visual appeal. Areas of Pittwater Spotted Gum Forest to be retained will be protected and managed during the construction phase and ongoing during operation, with all works guided by a BMP and a VMP. These plans will support the long-term conservation and enhancement of habitat on the site.
To ensure that residential development does not have an adverse effect on those values.	All practical measures have been taken to avoid and minimise impacts on the site's ecological values. The proposed development has been carefully designed to retain as many trees as possible, including twenty-one Pittwater Spotted Gum Forest trees and the vegetated foreshore. Comprehensive mitigation measures will be implemented to address any potential impacts on vegetation, ensuring the ecological integrity of the Pittwater Spotted Gum Forest is preserved during construction and ongoing during operation.
To provide for residential development of a low density and scale integrated with the landform and landscape.	The proposal is for a low-density residential development that is consistent with adjoining properties in both scale and character, and is sensitively integrated with the natural landform and landscape.
To encourage development that retains and enhances riparian and foreshore vegetation and wildlife corridors.	The proposal will retain foreshore vegetation and twenty-one Pittwater Spotted Gum Forest trees, which function as a wildlife corridor for highly mobile fauna.

11.4.2 Clause 7.6 Biodiversity

The subject land is identified as “Biodiversity” on the Pittwater Biodiversity Map (Figure 11.1). Accordingly, the development must demonstrate compliance with the objectives of Clause 7.6 – Biodiversity of the Pittwater Local Environmental Plan 2014, which aims to maintain terrestrial, riparian and aquatic biodiversity through:

- (a) the protection of native fauna and flora;
- (b) the protection of the ecological processes necessary for their continued existence; and
- (c) the encouragement of the conservation and recovery of native fauna and flora and their habitats.

The proposal supports these objectives by retaining twenty-two native trees on the site, including several of high and moderate retention value. Vegetation along the steep foreshore will also be preserved. Importantly, the proposal ensures the retention of Tree 8, the site’s only habitat tree, which provides habitat for the Sulphur-crested Cockatoo.

A BMP and a VMP will be developed to guide the protection and management of the Pittwater Spotted Gum Forest during and after construction. These plans will ensure the long-term conservation of both flora and fauna and will incorporate best practice measures to safeguard the ecological processes necessary for their continued existence.

The Aquatic Ecology Assessment (Kingfisher, 9 July 2025) includes an assessment of impacts to the coastal environment, with a particular focus on seagrasses, as depicted in Figure 11.1. The assessment identifies and evaluates the direct and indirect impacts that the proposed development may have on seagrass habitats, which are crucial for maintaining biodiversity and supporting marine life in the area. The report outlines potential risks to the seagrasses, including changes in water quality, sedimentation, and other environmental factors, and provides recommendations for mitigating these impacts to safeguard these important ecosystems.

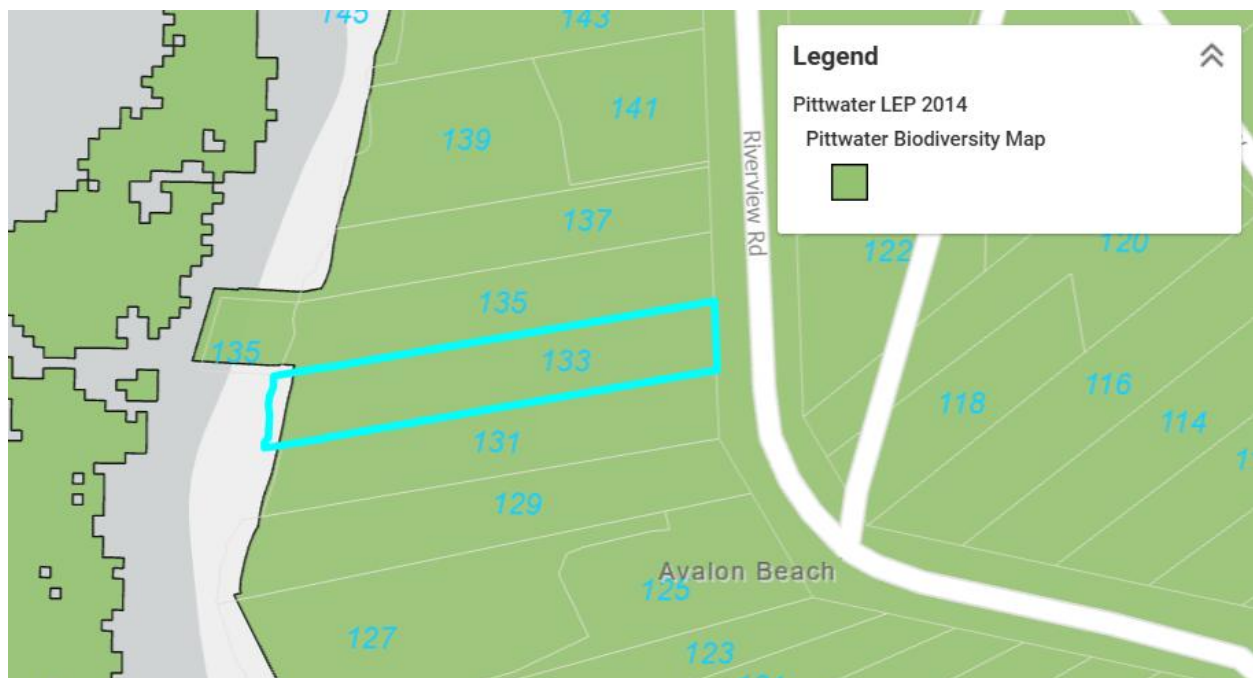


Figure 11.1. Pittwater Biodiversity Map.

11.4.3 B4.7 Pittwater Spotted Gum Forest – Endangered Ecological Community

Pittwater Spotted Gum Forest has been identified within the subject land. Accordingly, the relevant controls under Clause B4.7 Pittwater Spotted Gum Forest – Endangered Ecological Community of the Pittwater 21 Development Control Plan apply to the proposed development.

Table 11.4. Compliance with Control B4.7 PSGF – EEC.

DCP Control	Compliance
Development shall not have an adverse impact on Pittwater Spotted Gum Endangered Ecological Community.	The development does not involve the removal of canopy trees within the mapped Pittwater Spotted Gum Forest. The proposal retains twenty-one trees, including significant specimens such as Tree 8 (habitat for <i>Cacatua galerita</i>). Native tree removal is limited to nine small trees. Canopy trees retained across the site and along the foreshore maintain habitat connectivity between remnant patches of Pittwater Spotted Gum Forest on neighbouring properties. A VMP will guide restoration and regeneration of the EEC, including active weed management, plant replacement, and habitat enhancement.
Development shall restore and/or regenerate Pittwater Spotted Gum Endangered Ecological Community and provide links between remnants.	The restoration and regeneration of Pittwater Spotted Gum Forest will be addressed through measures outlined in the VMP.
Development shall be in accordance with any Pittwater Spotted Gum Forest Recovery Plan.	There is currently no NSW State Government Recovery Plan for Pittwater Spotted Gum Forest. The NSW Office of Environment and Heritage (OEH) profile² for EEC outlines key action to support its recovery. These include: • Removing rubbish; • Controlling stormwater and soil erosion; • Restricting unauthorised access and inappropriate land use; • Managing weed infestations; • Protecting habitat from clearing and further fragmentation; and • Restoring degraded habitat through bush regeneration techniques. The BMP and VMP will address these objectives through targeted actions such as rubbish removal, weed control, and the application of bush regeneration techniques. Stormwater and soil erosion will be managed in accordance with the Stormwater Management Plan (Xavier Knight, 16 May 2025). Temporary fencing will be installed around the construction site boundary during works to prevent disturbance. Tree protection measures will be implemented in line with the Arboricultural Impact Assessment prepared by Blue Bros Arboriculture (16 May 2025).
Development shall result in no significant onsite loss of canopy cover or a net loss in native canopy trees.	The development does not require the removal of any canopy trees. The proposal involves the removal of nine small trees, including <i>Glochidion ferdinandi</i> (Cheese Tree), <i>Allocasuarina torulosa</i> (Forest She-oak), <i>Elaeocarpus reticulatus</i> (Blueberry Ash), <i>Pittosporum undulatum</i> (Sweet Pittosporum), <i>Brachychiton acerifolius</i> (Illawarra Flame Tree), and <i>Acacia</i> spp. The replanting of native vegetation within the

² [Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion - profile | NSW Environment, Energy and Science](#)

DCP Control	Compliance
	Pittwater Spotted Gum Forest community on-site will be detailed in the VMP.
Development shall retain and enhance habitat and wildlife corridors for locally native species, threatened species and endangered populations.	The development retains twenty-one Pittwater Spotted Gum Forest trees across the site and vegetation along the foreshore, thereby maintaining habitat connectivity for locally native and threatened species. Notably, the proposal retains Tree 8, a significant habitat tree located on the shared boundary of 133 and 131 Riverview Road, which supports Sulphur-crested Cockatoos (<i>Cacatua galerita</i>). Measures to enhance habitat values and strengthen wildlife corridors for these species will be detailed in the VMP.
Caretakers of domestic animals shall prevent them from entering wildlife habitat.	Noted.
Fencing shall allow the safe passage of native wildlife.	Noted.
Development shall ensure that at least 80% of any new planting incorporates native vegetation (as per species found on the site or listed in Pittwater Spotted Gum Endangered Ecological Community).	The subject land has an area of 1,133 m², with the proposal providing 704 m² of landscaped area, equivalent to 62% of the total site area. The Architectural Package includes an indicative plant species list for landscaping. The final species selection must be approved by the Project Ecologist. The planting list must include a minimum of 80% native species, comprising species either found on the site or listed in Pittwater Spotted Gum Forest EEC.
Development shall ensure any landscaping works are outside areas of existing Pittwater Spotted Gum Endangered Ecological Community and do not include Environmental Weeds.	Under no circumstances will environmental weeds be used in the landscape design.

11.5 Appendix V – Credit reports



BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00057592/BAAS24037/25/00057593	Construction of a dwelling	28/10/2024
Assessor Name	Report Created	BAM Data version *
Brooke Thompson	16/07/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS24037	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map	16/07/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3234_Moderate	3234-Hunter Coast Lowland Spotted Gum Moist Forest	Moderate	0.09		

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057592/BAAS24037/25/00057593	Construction of a dwelling	28/10/2024
Assessor Name	Report Created	BAM Data version *
Brooke Thompson	16/07/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS24037	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map	16/07/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Black Bittern	<i>Ixobrychus flavicollis</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis gularis</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Eastern Osprey	<i>Pandion cristatus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Flame Robin	<i>Petroica phoenicea</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest

BAM Predicted Species Report

Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Bent-winged Bat	<i>Miniopterus australis</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Eagle	<i>Hieraaetus morphnoides</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Lorikeet	<i>Glossopsitta pusilla</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Regent Honeyeater	<i>Anthochaera phrygia</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Rosenberg's Goanna	<i>Varanus rosenbergi</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Scarlet Robin	<i>Petroica boodang</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Square-tailed Kite	<i>Lophoictinia isura</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Swift Parrot	<i>Lathamus discolor</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Varied Sittella	<i>Daphoenositta chrysoptera</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
White-throated Needle-tail	<i>Hirundapus caudacutus</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	3234-Hunter Coast Lowland Spotted Gum Moist Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057592/BAAS24037/25/00057593	Construction of a dwelling	28/10/2024
Assessor Name	Report Created	BAM Data version *
Brooke Thompson	16/07/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS24037	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map	16/07/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☒ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Rhodamnia rubescens</i> Scrub Turpentine	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☒ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Rhodomyrtus psidioides</i> Native Guava	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☒ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Vespadelus troughtoni</i> Eastern Cave Bat	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☒ Nov ☒ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Eastern Australian Underground Orchid	Rhizanthella slateri	Habitat degraded
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Little Bent-winged Bat	Miniopterus australis	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Swift Parrot	Lathamus discolor	Habitat constraints

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057592/BAAS24037/25/00057593	Construction of a dwelling	28/10/2024
Assessor Name	Report Created	BAM Data version *
Brooke Thompson	16/07/2025	Current classification (live - default) (80)
Assessor Number	BAM Case Status	Date Finalised
BAAS24037	Finalised	16/07/2025
Assessment Revision	BOS entry trigger	Assessment Type
4	BOS Threshold: Biodiversity Values Map	Part 4 Developments (Small Area)

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAIL	Ecosystem credits

BAM Credit Summary Report

Hunter Coast Lowland Spotted Gum Moist Forest												
1	3234_Moderate	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	45.1	22.7	0.09	Geographic Distribution	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	1
											Subtotal	1
											Total	1

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits
Chalinolobus dwyeri / Large-eared Pied Bat (Fauna)									
3234_Moderate	22.7	22.7	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	2
								Subtotal	2

BAM Credit Summary Report

Vespadelus troughtoni / Eastern Cave Bat (Fauna)

3234_Moderate	22.7	22.7	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	2
								Subtotal	2



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057592/BAAS24037/25/00057593	Construction of a dwelling	28/10/2024
Assessor Name	Assessor Number	BAM Data version *
Brooke Thompson	BAAS24037	Current classification (live - default) (80)
Proponent Names	Report Created	BAM Case Status
Krystal Pszczonka	16/07/2025	Finalised
Assessment Revision	BOS entry trigger	Assessment Type
4	BOS Threshold: Biodiversity Values Map	Part 4 Developments (Small Area)
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
16/07/2025		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Endangered Ecological Community	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Species		
Chalinolobus dwyeri / Large-eared Pied Bat		

BAM Biodiversity Credit Report (Like for like)

Vespadelus troughtoni / Eastern Cave Bat

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3234-Hunter Coast Lowland Spotted Gum Moist Forest	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	0.1	1	0	1

BAM Biodiversity Credit Report (Like for like)

3234-Hunter Coast Lowland Spotted Gum Moist Forest	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion This includes PCT's: 3234, 3437	-	3234_Moderate	Yes	1	Pittwater, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Chalinolobus dwyeri / Large-eared Pied Bat	3234_Moderate	0.1	2.00
Vespadelus troughtoni / Eastern Cave Bat	3234_Moderate	0.1	2.00

Credit Retirement Options

Like-for-like credit retirement options

Chalinolobus dwyeri / Large-eared Pied Bat	Spp	IBRA subregion
	Chalinolobus dwyeri / Large-eared Pied Bat	Any in NSW



BAM Biodiversity Credit Report (Like for like)

Vespadelus troughtoni / Eastern Cave Bat	Spp	IBRA subregion
	Vespadelus troughtoni / Eastern Cave Bat	Any in NSW